Theses and Dissertations   1. Thesis and Dissertation Collection, all items

2013-12

Assessing automatic aid as an emergency response model

Gretz, Raymond C.

Monterey, California: Naval Postgraduate School

http://hdl.handle.net/10945/38938

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

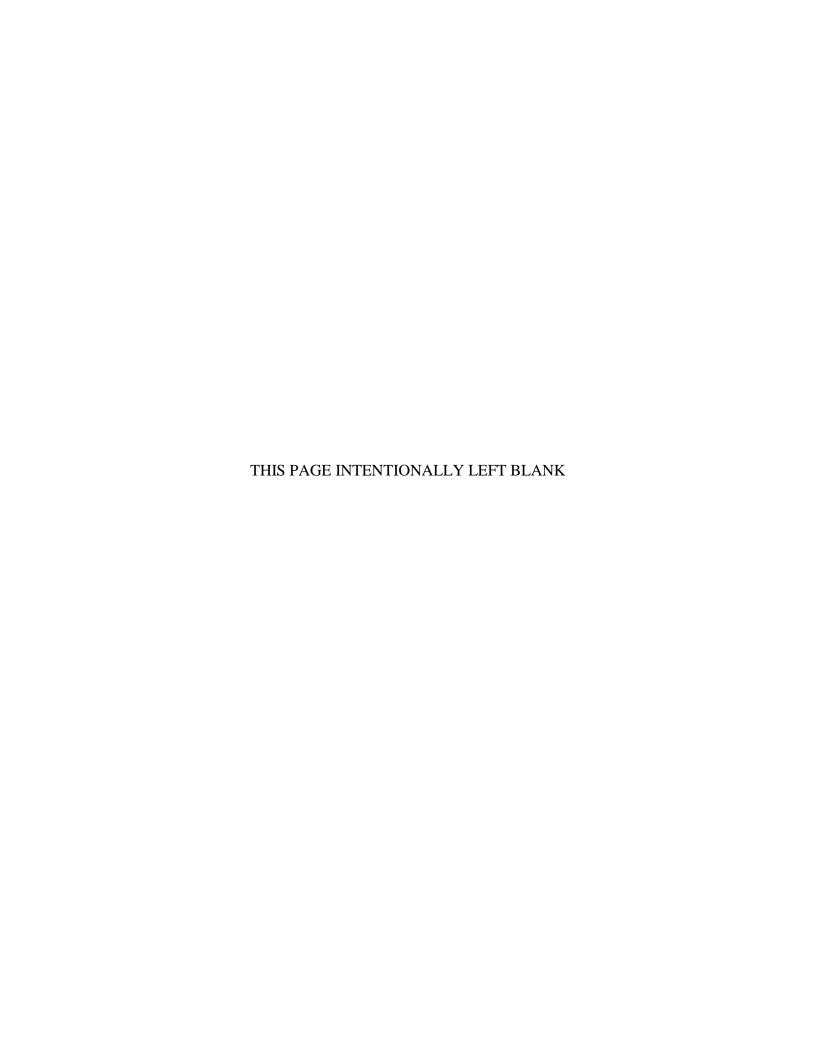**ASSESSING AUTOMATIC AID AS AN EMERGENCY RESPONSE MODEL**

by

Raymond C. Gretz

December 2013

Thesis Advisor: Robert Bach
Second Reader: John Donnelly

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE		*Form Approved OMB No. 0704-0188*
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.		
1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** December 2013	**3. REPORT TYPE AND DATES COVERED** Master's Thesis
4. TITLE AND SUBTITLE ASSESSING AUTOMATIC AID AS AN EMERGENCY RESPONSE MODEL		**5. FUNDING NUMBERS**
6. AUTHOR(S) Raymond C. Gretz		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000		**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A		**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number NPS.2013.0002-CR01-EP7-A .		
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited		**12b. DISTRIBUTION CODE** A

13. ABSTRACT (maximum 200 words)

The Northern Virginia Mutual Response (NVMR) Agreement is a time-tested successful model of an automatic-aid system. Since the 1970s, neighboring jurisdictions have collaborated and developed trust while providing efficient service to the public. Political borders do not create barriers to emergency services but provide an opportunity for collaboration.

This thesis sought to answer (a) How does the automatic-aid response model work? (b) What benefits and challenges do participants experience? (c) What factors influence the adoption and continuation of automatic aid? The methodology of this research was a multiple case study of three participating jurisdictions in the NVMR Agreement. The analysis triangulated data from three levels of three organizations, along with various documents to describe feelings, experiences, and causes within the NVMR Agreement.

The conclusions of this study stem from the common themes found in the data. Automatic aid leverages resources to maximize efficiency and has several additional benefits including increased levels of leadership, collaboration, and trust.

14. SUBJECT TERMS Automatic aid, interagency, collaboration, trust, equity, leadership, District of Columbia Fire			**15. NUMBER OF PAGES** 135
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UU

i

THIS PAGE INTENTIONALLY LEFT BLANK

ASSESSING AUTOMATIC AID AS AN EMERGENCY RESPONSE MODEL

Raymond C. Gretz
Battalion Chief, District of Columbia Fire & Emergency Medical Services Department
B.A., University of Maryland, 1997

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
December 2013**

Author: Raymond C. Gretz

Approved by: Robert Bach
                    Thesis Advisor

                    John Donnelly
                    Second Reader

                    Mohammed Hafez, PhD
                    Chair, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

The Northern Virginia Mutual Response (NVMR) Agreement is a time-tested successful model of an automatic-aid system. Since the 1970s, neighboring jurisdictions have collaborated and developed trust while providing efficient service to the public. Political borders do not create barriers to emergency services but provide an opportunity for collaboration.

This thesis sought to answer (a) How does the automatic-aid response model work? (b) What benefits and challenges do participants experience? (c) What factors influence the adoption and continuation of automatic aid? The methodology of this research was a multiple case study of three participating jurisdictions in the NVMR Agreement. The analysis triangulated data from three levels of three organizations, along with various documents to describe feelings, experiences, and causes within the NVMR Agreement.

The conclusions of this study stem from the common themes found in the data. Automatic aid leverages resources to maximize efficiency and has several additional benefits including increased levels of leadership, collaboration, and trust.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

BRAC   Base Realignment Committee

CAD   Computer Aided Dispatch

CBRNE   Chemical, Biological, Radiological, Nuclear, Explosive

CL&P   Connecticut Power & Light

COG   Council of Governments

DC   District of Columbia

EMAC   Emergency Mutual Aid Compact

EMS   Emergency Medical Service

FEMA   Federal Emergency Management Agency

IAFC   International Association of Fire Chiefs

IMAS   Intrastate Mutual Aid System

ISO   Insurance Services Office

IT/GIS   Information Technology/ Geographic Information System

MABAS   Mutual Aid Box Alarm System

NFPA   National Fir Protection Association

NIMS   National Incident Management System

NOVA   Northern Virginia

NVMR   Northern Virginia Mutual Response

SOG   Standard Operating Guideline

USFA   United States Fire Administration

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

Many thanks to my classmates and faculty. The experience with the Center for Homeland Defense and Security has changed my life and for that, I am grateful.

To my wonderful children, Nicholas, Spencer, Kayla, and Krista: I appreciate your patience and understanding. I hope that I am a role model to you, proving that you can achieve anything you want.

To my wife, Gail: I am consistently amazed at your strength as woman, mom, and wife. Your support and sacrifice over the last two years is immeasurable; thank you. I know that I am the luckiest man alive to have you as my wife. I love you!

THIS PAGE INTENTIONALLY LEFT BLANK

I.   INTRODUCTION

A.   PROBLEM SPACE

In the aftermath of 9/11, the federal government provided significant guidance to encourage the development of shared response capabilities for future incidents. The 9/11 Commission Report called for regional efforts and "multi-jurisdictional mutual assistance compacts."[1] In Homeland Security Presidential Directive 5, President Bush created the National Incident Management System (NIMS) for "all levels of government across the nation have the capability to work efficiently and effectively together," and later in 2007, attached a fiscal incentive through grants to ensure compliance. The fire industry largely complied with the mandate and national organizations such as the IAFC supported mutual aid systems. This issue is an important homeland security issue for the fire service. As the industry moves toward increased collaboration, understanding how to successfully implement automatic aid programs will increase interoperability and resilience. Automatic aid is a subset of mutual aid in which assistance is pre-established. Typically based on geographic response areas, automatic aid provides immediate support from a neighboring jurisdiction.

In 2006, the International Association of Fire Chiefs (IAFC) launched the National Fire Service Mutual Aid System. This action was after the response to Hurricanes Rita and Katrina were inadequate and identified many flaws.[2] The policy goals of the system were: (a) Create a national system that integrates intrastate and interstate mutual aid (b) Ensure that the fire and rescue response must be capable of responding from an all-hazards approach (c) Evaluate the integration of existing state mutual aid plans (d) Assist in the development of state plans where none currently

---

[1] National Commission on Terrorist Attacks Upon the United States (Philip Zelikow, Executive Director; Bonnie D. Jenkins, Counsel; Ernest R. May, Senior Advisor), *The 9/11 Commission Report* (New York: W.W. Norton & Company, 2004), 397.

[2] International Association of Fire Chiefs, *A National Mutual Aid System for the Fire Service: A Strategic Plan*. August 2006, 1.

exists (e) Strengthen the fire and rescue service, response capability using mutual aid and (f) Integrate and assist other disciplines in the development and use of emergency response plans.

This thesis focuses on strengthening the fire and rescue service and response capability using mutual aid. Automatic aid is a type of mutual aid. The concept of mutual aid is quite simple in that when a jurisdiction needs help, they call for assistance and help is rendered by another jurisdiction or agency. Usually, this is a neighboring community. How automatic aid differs is a small nuance with significant consequences. In an automatic aid response model, the assistance is given before it is requested, usually involving simultaneous dispatch. An example is a city bounded by multiple jurisdictions, like Laurel, Maryland. In Laurel, a response to a reported house fire includes fire companies from Prince Georges, Montgomery and Anne Arundel Counties. This response is due to a pre-existing agreement, established to ensure immediate response from each. In contrast, a mutual aid response model adds a time factor and requires a call for help. The response is not automatic or assumed. For example, if a jurisdiction had depleted its resources on an incident, additional resources could be requested from neighboring jurisdictions.

The disasters at the beginning of the 21st century have fomented unprecedented change in the fire and emergency services. Although the direction of the fire service is toward more regional collaboration and automatic aid, one survey, showed only 22 percent of respondents used automatic aid for Insurance Services Office (ISO) Public Protection Classification credit. The ISO Public Classification score is used to determine fire insurance rates. Those with higher scores and better fire protection achieve lower insurance rates. However, despite the benefits, and the scope of change in the industry, automatic aid is not universally accepted. Examples, such as Jackson, Michigan and Roseburg, Oregon, show adoption and then abandonment of an automatic aid system.[3] These cases reportedly failed due to an inequitable relationship where one jurisdiction felt

---

[3] Keith Roberts, "Automatic Aid Goes Up in Flames," MLive Media, accessed 10/25/13, http://www.mlive.com/news/jackson/index.ssf/2011/07/automatic_aid_goes_up_in_flame.html; Jack Cooley, *Putting the Mutual Back Into An Automatic Aid Agreement*. National Fire Academy. Emmitsburg, MD, February 2003, 10.

they gave more than they received. The District of Columbia is an example of a jurisdiction that has limited participation in automatic aid. The District offers no automatic aid and receives aid limited to an advanced life support medic unit that crosses the Maryland-District of Columbia border to serve subscribed members.[4]

Based on the history and current disparate condition of automatic aid in emergency services, an initial question is what makes some jurisdictions hesitant or not fully committed to pursuing such agreements. The author believes by studying an existing successful model, one can discern those critical factors for success.

This research investigated the use of automatic aid as an emergency response model for fire and emergency medical services. More specifically, it examined the well-established successful Northern Virginia Mutual Response Agreement. The author believed that equity theory best described how jurisdictions maintain a successful automatic aid agreement. The author also feels that the automatic aid response model increases a community's resilience. However, a competing theory is that being independent and not in need of shared resources is a better route to resilience.

---

[4] Memorandum of Understanding between BCCRS & DCFEMS, accessed 10/25/13, http://www.bccrs.org/district-columbia.

THIS PAGE INTENTIONALLY LEFT BLANK

II. RESEARCH QUESTION

In an era when citizens demand more efficiency from their government, how and in what ways does an automatic aid model overcome limits, provide sufficient response, and constrain costs to any particular jurisdiction?

The sub questions include:

(a)   How does the automatic aid response model work?

(b)   What benefits and challenges do participants experience?

(c)   What factors influence the adoption and continuation of automatic aid?

A.   LITERATURE REVIEW

The literature review identified the resources that aid in understanding automatic aid as a response model and provides insight into how jurisdictions benefit from such relationships.

The literature review considered sources for their relevance to the study of mutual aid and automatic aid. Although some sources did not address fire response, they are included for their relevance to the broader topic of collaboration. This review addresses: (a) Collaboration in Homeland Security, (b) The emergency response system as a complex adaptive system (c) Fire service mutual/automatic aid, (d) Mutual aid in nonfire service related fields and (e) Equity theory. The intent is to examine different models and practices of mutual/automatic aid in practice and as a theory.

B.   COLLABORATION IN HOMELAND SECURITY

Collaboration in homeland security is using collective resources for a common purpose.[5] The majority of collaboration literature in homeland security falls into one of

---

[5] William Pelfrey, The Cycle of Preparedness: Establishing a Framework to Prepare for Terrorist Threats. *Journal of Homeland Security*, 2, no. 1 (2005); Susan Hocevar, Gail Thomas, Espell Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness," in *Innovation through Collaboration (Advances in Interdisciplinary Studies of Work Teams, Volume 12)*, ed. Michael M. Beyerlein, Susan T. Beyerlein, Frances A. Kennedy (Emerald Group Publishing Limited,2006), 22.

two categories. The first identifies the benefits one would enjoy from collaboration, and the other identifies the elements of what enables collaboration.

In *How to Build Collaborative Advantage*, Hansen and Nohria (2004) identify the benefits of collaboration as cost savings, better decision-making, enhanced capacity from dispersed resources, and innovation through cross-pollination.[6] Although their research focused on multi-units of a single business, it is applicable because it is similar to U.S. fire service organizations where individual fire engines make up the department. They offer tools to identify barriers and strategies to overcome them.

The advantages of partnerships are many. They include increased efficiency by creating economies of scale and sharing information. They also improve effectiveness by leveraging dispersed resources.[7] Hocevar, Thomas, and Jansen make the connection between efficiently handling routine tasks and addressing significant incidents. They posit that interagency collaboration is critical for success.[8]

In Assessing Partnerships: New Forms of Collaboration, Klitgaard and Treverton (2003) list the advantages of partnerships. They include: (a) Greater efficiency by pooling resources, creating economies of scale, facilitating information sharing (b) Improved effectiveness by leveraging a wider variety of skills and resources and (c) Increased equity by facilitating broader participation in goal setting and problem solving, as well as building trust needed to work toward shared responsibilities and mutual benefit. Potential outcomes include cost reductions and less bureaucracy.

The elements necessary for effective collaboration include communication, structure, and trust. The most critical factor for collaborative success is communication. Communication benefits from innovative technology, including social media and WebEOC (virtual Emergency Operations Center linking each agency operations center) enabled personnel to collect, analyze, process, and disseminate relevant incident

---

[6] Morten Hansen, and Nitin Nohria, "How to Build Collaborative Advantage," *MIT Sloan Management Review 46*, no. 1 (2004): 23.

[7] Hocevar, Thomas, and Jansen, Building Collaborative Capacity 4; Robert Klitgaard, Gregory Treverton, Assessing Partnerships: New Forms of Collaboration, 2003, 15.

[8] Hocevar, Thomas, and Jansen, Building Collaborative Capacity, 5.

information almost instantaneously.[9] The consolidation of information to one system is critical for incident command. Incident Commanders base decisions on centrally located information and its importance cannot be overstated.[10] This is in stark contrast to first responder's ability to process information on 9/11. In New York, the police and fire departments could not communicate vital information with one another.[11] The lack of communication contributed to the large number of firefighter fatalities.

Structure is the second most critical factor for collaboration. A well-organized and structured plan, such as the National Incident Management System (NIMS), creates clear lines of communication and authority. The structure, or platform, is as William Bratton describes, the "WD-40-The Lubricating Oil" of collaboration.[12] Tools, such as planning committees and the National Incident Management System (NIMS), save time and prevent "spinning your wheels trying to find out who to talk to."[13] Use of the Incident Command System (ICS) creates a common structure to follow and enables planners to manage the economy of scale and redundant needs.[14] Formalizing roles and relationships helps to avoid confusion and increases the potential for success.[15]

The final key to successful collaboration is trust. A major success factor for collaboration identified by the research of Hocevar, Thomas, and Jansen's research is a "shared purpose."[16] Having a shared purpose or common goal can reduce barriers such as interagency competition and build trust.[17] The shared purpose of managing a

[9] The District of Columbia Homeland Security and Emergency Management Agency, *Presidential Inauguration After Action Report.* June 2009, 14.

[10] Donald Moynihan, *Leveraging Collaborative Networks in Infrequent Emergency Situations*. 2005, 28.

[11] National Commission on Terrorist Attacks Upon the United States, The 9/11 Commission Report, 322.

[12] William Bratton, and Zachary Tumin, *Collaborate or Perish!,* New York: Crown Business, 2012, 98.

[13] Moynihan, *Leveraging Collaborative Networks, ,* 25.

[14] Klitgaard and Treverton. *Assessing Partnerships*, 15.

[15] Hocevar, Thomas, and Jansen, Building Collaborative Capacity, 22.

[16] Hocevar, Thomas, and Jansen, Building Collaborative Capacity, 6.

[17] Moynihan, *Leveraging Collaborative Networks*, 25.

collaborative event is often the "currency that mattered" and enables collaborative success.[18]

As author Steven Covey (2012) points out, the economics of trust shows that high trust equals better speed and lower cost.[19] It increases efficiency. Increased efficiency from collaborative efforts is a natural result based on trust. Trust is an essential ingredient to the planning process, and as each agency declares its intent and does what it says it will do, the reciprocal trust builds. However, Covey also identifies trust as the "first casualty" of most mergers and provides examples such as Warren Buffet as someone who exhibits "smart trust."[20]

Events that exceed the capacity of one agency require interagency interaction.[21] Hocevar, Thomas, and Jansen argue that this begins with the routine interaction and builds to the large events or incidents. Large incidents or any other collaborative effort succeeds when communication, structure, and trust come together to improve collaborative capacity.[22] The inter-elation of these factors creates a symbiotic relationship between participating agencies.

C.   EMERGENCY RESPONSE SYSTEM AS A COMPLEX ADAPTIVE SYSTEM

Emergency response systems possess the elements of a complex adaptive system, as defined by Booher and Innes, those being the agent, interaction, system behavior, and the capacity to evolve.[23] The network of fire and EMS units in a jurisdiction with multiple units, serves as the agent. The interaction of units is defined by calls to 911 and changes dynamically throughout each day as conditions change. Complexity Theory postulates that complex systems, such as an emergency response system, mimic

---

[18] Bratton, and Tumin, *Collaborate or Perish!*, 135.

[19] Steven M. Covey, *Smart Trust*. New York: Free Press, 2012, 16.

[20] Ibid., 240.

[21] Hocevar, Thomas, and Jansen, *Building Collaborative Capacity*, 20.

[22] Ibid., 20.

[23] David E. Booher, and Judith E Innes (2010-02-08), Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy (32). United Kingdom: Taylor & Francis. Kindle Edition.

organisms in their ability to adapt and change.[24] Such a system, with multiple moving parts, interacting in different patterns can only be understood by looking at the interactions.[25]

The interaction of an emergency response system is key to understanding it as a complex adaptive system. Once an emergency response system receives information (911 call), it decides on assigning appropriate resources and dispatches resources to the location. Although Elliot and Kiel (2004) felt that the "agent" was an effective influence point in a complex adaptive system,[26] Rouse (2000) points out that there is no single point of control[27] but agrees with Meadows (2008) that the purpose or goal is an influential point in any system.[28] This "discover, choose, act" cycle is repeated with each call for service and is how the system learns.[29] Indeed, systems and the elements within them change behaviors over time from learned experiences.[30] Another way to describe how rules influence a system is that from simple rules, "complex and delightful patterns" emerge.[31]

In *Managing Complexity*, Rouse (2000) uses the complex adaptive lens to explore disease control. The parallels exist between Public Health and the fire service. Some are evident through the key roles played by government, that being: (a) Risk reduction for the public and (b) Investment in "important things that would not otherwise receive investments."[32] Although, there is no tangible return on investment in dollars provided

---

[24] Judith E. Innes, and David E. Booher, "Consensus Building and Complex Adaptive Systems: A Framework for Evaluating Collaborative Planning." *Journal of the American Planning Association* 65, no. 4 (09, 1999): 417.

[25] Booher, and Innes, *Planning with Complexity*, 32.

[26] Euel Elliott, and L. Douglas Kiel, "A Complex Systems Approach for Developing Public Policy Toward Terrorism: An Agent-Based Approach " *Chaos, Solutions & Fractals* 20, no. 1 (2004): .67.

[27] William Rouse, "Managing Complexity," *Information, Knowledge, System Management* 2, no. 2, 145.

[28] Donella Meadows, *Thinking in Systems: A Primer*. White River Junction, Vermont: Chelsea Green Publishing, 2008, 159.

[29] Ralph Stacey, *Complexity and Creativity in Organizations,* 1996, 41.

[30] Rouse, "Managing Complexity," 145.

[31] Meadows, *Thinking in Systems*, 159.

[32] Rouse, "Managing Complexity,"159.

by public health, police departments, and fire service, these elements provide for the greater good in a community.

Identifying the emergency response system as a complex adaptive system rebrands what has been happening in jurisdictions all along. Stacey (1996) argues that complex adaptive theory provides a platform that is "more useful" than stable equilibrium paradigms in understanding organizations.[33] He posits that the implications for organizations and management are new analogies and metaphors to increase understanding.

Mutual aid is a collaborative response to threats facing the community. Such preparedness was called for in the 911-commission report[34] and is promoted in the Strategic National Risk Assessment that calls for all levels of government to understand threats and hazards (all hazards) in order to act collaboratively through mutual or automatic aid.[35]

D.   MUTUAL AID

The ideas of sharing, collaborating, and mutual aid are not new. Although the Bible offered many examples, one entry called for those who have two coats to give one to those with none.[36] This example expects one to help those in need and exemplifies the idea of neighbor helping neighbor. Today, the idea of sharing and collaborating permeates much of the writing in homeland security. Collaboration is a "necessary foundation" and critical for homeland security.[37] Similar to the findings of Klitgaard and Treverton (2003) and Hocevar, Thomas, and Jansen (2006), Thurmaier et al. (2009) examined two motives behind collaboration. They identified one as cost saving, and the

---

[33] Stacey, *Complexity and Creativity*, 281.

[34] National Commission on Terrorist Attacks upon the United States, *The 9/11 Commission Report*, 397.

[35] Department of Homeland Security, *Strategic National Risk Assessment*. December 2011, 1.

[36] Luke 3:11, King James Version.

[37] William L. Waugh Jr., and Gregory Streib,, "Collaboration and Leadership for Effective Emergency Management." *Public Administration Review*. December 2006.vol 66, supp 1. 131–140.

other as gaining an ability that one lacks. In the case of automatic aid, it may be both and was "critical to service delivery."[38]

Discussions on National Preparedness often include the idea of mutual and automatic aid. Clovis noted in his paper "*Thinking about National Preparedness*" that resources, being a limiting factor, a focused programmatic approach is desirable.[39] He went on to describe the creation of a "capability cluster" to pool resources, which is identical to mutual aid in the fire service.

Borders and their response implications are a recognized problem for many jurisdictions. Local, county, state, and even international borders pose response problems to emergency responders. Hill and Anderson examined this issue from two different perspectives. While they both took the position that jurisdictions need to help one another, Anderson went further and discussed "shared responsibility" that transcend borders because chemical, biological, radiological, nuclear, explosive, (CBRNE) attacks fail to recognize "artificial international boundaries."[40]

Both research papers examined best practices to answer a question. While Hill looked at examples from around the country (Illinois and Virginia), Anderson focused on an Arizona-Mexican border initiative to share resources across political borders. Hill's more robust review gave good analysis of both programs and pointed out that jurisdictions must determine if certain risks require a "more robust structure" to address the needs.[41]

Hill's use of the real-life example of the Northern Illinois University shooting was a good illustration of how beneficial automatic aid systems can be and the analysis that

---

[38] Kurt Thurmaier, and Yu-Che Chen, "Managing for Less: The Fiscal Attributes of Collaboration." National Public Management Research Conference. October 2009.

[39] Samuel Clovis, "Thinking About National Preparedness: The National Planning Scenarios and Jurisdictional Own-source Capabilities." Unpublished Manuscript. Naval Postgraduate School Center for Homeland Defense and Security.

[40] Christopher A. Anderson, "No Emergency Incident Recognizes Borders." Naval Postgraduate School, 2011, 25.

[41] Cheryl Hill, "EMS Response to Mass Casualty Incidents: The Critical Importance of Automatic Statewide Mutual Aid and MCI Training." Naval Postgraduate School, 2008, 72.

automatic aid can "decrease the incidence of human suffering" was an important factor as well.[42]

Having the ability to apply the findings in various jurisdictions makes the program more valuable to the community as a whole. While the Mutual Aid Box Alarm System (MABAS) and Hampton Roads Metropolitan Medical Response System programs, described in Hill's paper, could be duplicated in a variety of locales across the country, the Bi-national Arizona Emergency Response Task Force has limited applicability because it was so exclusive to the Mexico—United States border. These papers described systems that used mutual aid but fail to address the environment in which these systems began.

There are three themes in fire service related mutual aid literature. The first theme is a situation report on the current industry trends and practices, the second theme involves a need to change or call to action, the last theme provides direction to those seeking to adopt an automatic aid system.

In assessing the current state of fire service mutual aid, one must examine the past. The genesis of modern automatic aid was well documented in the 1991 United States Fire Administration technical report that described the California Fire and Rescue Mutual Aid System. That system was a robust statewide automatic aid system. The idea that one community may not be able to handle various types of emergencies was the impetus for mutual aid systems. [43] Noting that disasters are "unpredictable," one never knows when one will occur, and a mutual aid system helps avoid resource depletion.[44]

All 50 states participate in Emergency Management Assistance Compact (EMAC).[45] EMAC is a national mutual aid compact designed to move personnel,

---

[42] Ibid., 76.

[43] National Fire Protection Association, "Third Needs Assessment of the U. S. Fire Service." June 2011. NFPA: Quincy, MA; United States Fire Administration, *Special Report: Mutual Aid: Lessons Learned from the California System. USFA-TR-042*. January 1991.

[44] Ibid.

[45] Bruce Lindsay, "The Emergency Management Assistance Compact (EMAC): An Overview" *Congressional Research Service Report for Congress,* July 21, 2008.

equipment and commodities across state lines during Governor declared emergencies.[46] Some suggest that EMAC help is limited because it is not applicable to intrastate response [47] and mobilization under EMAC is not a simple process. Intended for incidents that go beyond one operational period, EMAC has limitations, but this research seeks to improve the first operational period in non-Governor declared emergencies.

The National Fire Protection Association (NFPA) needs assessment was a gap analysis to measure the success of federal grants over the last ten years. Interestingly, it found "little change in the ability of departments, using local resources, to handle certain …incidents." While change in other areas was attributed to the grant funding, the lack of movement in this area remains.[48] Both the NFPA (2011) and United States Fire Administration (USFA) note that "complex boundaries" benefit from cross border responses, yet many still resist such change.[49]

Many in the industry note a need for change in automatic and mutual aid; they serve as a call to action.[50] The Congressional Budget Office report (2007) discussed the removal of barriers for volunteers and "allow other state and local entities in the National Capital Region to become party to a mutual aid agreement."[51] Westermann (2007) testified about the effort to use California, Illinois, Ohio, and Florida as models to develop "robust" automatic aid programs.[52] Although EMAC is celebrated as a success, more training and education is needed[53] to make it more efficient, and Westermann

---

[46] Emergency Management Assistance Compact. "What is EMAC" Last Accessed August 1 2013.. http://www.emacweb.org/index.php?option=com_content&view=article&id=80&Itemid=256.

[47] Hill, *EMS response to mass casualty incidents,* 27.

[48] U.S. Congress, House, *Leveraging Mutual Aid for Effective Emergency Response,* Hearing before the Subcommittee on emergency communication, preparedness, and response, 110th Congress November 15, 2007 (statement of Kenneth D Murphy); Ibid., (statement of Chief Steven P. Westermann).

[49] NFPA, "Third Needs Assessment of the U. S. Fire Service," Viii; USFA, Special Report: Mutual Aid, 3.

[50] Westerman, 2007; Murphy 2007; CBO 2007; USFA 1991; NFPA 2011.

[51] Daniel Hoople, Congressional Budget Office Cost Estimate: S1245 A bill to reform mutual aid agreements for the national capital region. August 2007.

[52] U. S. Congress. House. *Leveraging Mutual Aid* (statement of Chief Steven P. Westermann).

[53] Lindsay, "The Emergency Management Assistance Compact (EMAC): An overview," 6; U. S. Congress, House. *Leveraging Mutual Aid* (statement of Kenneth D Murphy).

described the reimbursement delays as a "great fiscal strain" to participating departments.[54]

The International Association of Fire Chiefs provides direction on what the future of mutual aid will look like. They have an idea of where to go and how to get there. Bill Metcalf's October 2011 Congressional testimony promised that "Effective and well-resourced state and local mutual-aid systems would reduce the dependency on federal resources and reduce the overall cost of disaster response and recovery."[55] The outcome of committee work by the International Association of Fire Chiefs was the National Fire Service guide to Intrastate Mutual Aid Planning.[56]

Most industry associations (NFPA 2011; IAFC 2006; IAFC 2011) supported the concept of national mutual aid policies. Movement toward automatic aid is evident in many states such as California, Virginia, and Florida where such systems are already in place. Additionally, the IAFC provided a published guide that outlines a generic planning process, recommended functional components of a system, best practice tips, possible obstacles, and supporting factors.[57] However, compliance and adoption of the system is still not universal. Meeting minutes from the Emergency Management Committee of the International Association of Fire Chiefs indicate regional differences in adopting the Intrastate Mutual Aid System (IMAS) within FEMA regions

E.   MUTUAL AID IN RELATED FIELDS

The fire service is not alone in needing mutual aid. Many fields, such as Emergency Management, Law Enforcement, Health, Hospitals, and utilities all require "specialized resources."[58]

---

[54] Ibid., (statement of Chief Steven P. Westermann).

[55] William Metcalf, Testimony to Subcommittee on Economic Development, public buildings, and Emergency management of the Committee on Transportation and Infrastructure. Retrieved January 3, 2012 from:. http://www.iafc.org/Media/PressReleaseDetail.cfm?ItemNumber=5180.

[56] International Association of Fire Chiefs, A national mutual aid system for the fire service: A strategic plan. August 30, 2006. IAFC Fairfax, VA, 7.

[57] Ibid., 31.

[58] Kevin Morley, and Ray Riordan. An Action Plan for Mutual Aid and Assistance Networks for Water and Wastewater Utilities. American Water Works Association. 2006.2.

Assistance can come in varying degrees. The California Law Enforcement Mutual Jurisdiction Plan assigned labels to the various degrees of emergencies and the associated assistance required.[59] The common traits of mutual aid systems were outlined for each industry, and it was easy to identify the similarities. Timely assistance in time of need, emergency or otherwise, transcends many fields and disciplines. Riordan and Morley (2006) echoed the sentiment of the IAFC that "emergencies transcend political jurisdictional boundaries"[60] and offered a checklist similar to the IAFC and California.

Although some models examined, such as Riordan and Morley (2006), and the Bureau of Justice Assistance (2005) tend to be intrastate, others such as Whitler (2007) acknowledge the need for interstate agreements as a means to progress. The Bureau of Justice Assistance documents failed to recognize state boundaries as potential opportunities but did credit the National Capital Region for interstate planning.

Utilities often rely on the concept of mutual aid. The summer of 2011 brought severe storms to the northeast United States and Connecticut Light and Power (CL&P), and they had to rely on mutual aid.[61] The experience of CL&P is not unique and utilities will routinely send resources across state lines to assist in times of need.[62] The Southeastern Electric Exchange has a standing Mutual Assistance committee to facilitate and promote seamless assistance.[63]

Okaloosa County Water and Sewer Department turned to mutual aid after Hurricane Ivan in 2004.[64] The resulting mutual aid agreement led to not only the partnership involving the utilities and the Health Department, but also to partnerships

[59] Dennis Beene, and Dacia Young. Law Enforcement Mutual Aid Plan. California Emergency Management Agency. November 9, 2009.

[60] Morley and Riordan. An Action Plan for Mutual Aid, 2.

[61] Hartford Courant, *Is CL& P Really Ready for Storm Season, accessed* 10/11/12. http://articles.courant.com/2012-09-25/news/hc-ed-clp-power-outages-20120925_1_cl-p-line-workers-public-utilities-regulatory-authority.

[62] Ben Nuckols, Utilities Rely on Out of State Workers After Storm.*AP The Big Story, accessed* 10/16/12, . http://bigstory.ap.org/article/utilities-rely-out-state-workers-after-storm.

[63] The Southeastern Electric Exchange. Engineering and Operations, accessed 10/16/12, http://www.theexchange.org/aboutEOD.html.

[64] Doug Sims, *Mutual Aid Agreement for Water and Sewer Utilities 2005- 2006*. National Environmental Public Health Leadership Institute. 2006.

with other community organizations and agencies, such as hospitals, local emergency management, local and regional law enforcement, the Department of Environmental Protection, Department of Professional Regulation-Division of Hotels and Restaurants, Department of Agriculture and FBI. What originally began as a desire to bring eleven utilities closer together, has grown to bring neighboring counties and agencies into a network and coalition where responsibilities are clearly outlined and each feels a distinct duty to support the others.[65]

In public health, mutual aid agreements consist of "sharing information, data, supplies, resources, equipment, or personnel for the purpose of protecting the public's health"[66] The Center for Disease Control recognizes that health issues regularly transcend borders and effective mutual aid agreements consider U.S. state and local governments, tribes, Canadian provinces, First Nations, and Mexican states as potential partners.[67]

F. EQUITY THEORY

Equity theory concerns how people perceive fairness within interactions.[68] Bolino and Turnley (2008) recite the J. Stacy Adams initial elements, (a) inputs, (b) outcomes, (c) referent others, (d) equity evaluation, and (e) reactions to inequity.[69] Although equity theory was developed for interpersonal relationships, the examination of intergroup relationships is relevant (Adams and Freedman 1976) and has become common.[70]

The basic formula for equity theory as postulated by Adams is a simple ratio comparison.

One's outcome over input should equal the related party's outcome over input.

---

[65] Ibid., 305.

[66] Davis D. Stier, and Melisa L Thombley, Public Health Mutual Aid Agreements- a Menu of Suggested Provisions. Center for Disease Control and Prevention (CDC), 2007.

[67] Center for Disease Control, Public Health Law Program. Mutual Aid, http://www.cdc.gov/phlp/publications/topic/mutual_aid.html, accessed 10/16/12.

[68] Fathali Moghaddam, *Multiculturalism and Intergroup Relations*. Washington, DC: American Psychological Association, 2008, 111.

[69] Mark Bolino, and William Turnley, "Old Faces, New Places: Equity Theory in Cross-Cultural Contexts." *Journal of Organizational Behavior* 29, no. 1 (01, 2008): 29–50.

[70] Moghaddam, *Multiculturalism and Intergroup Relations*, 111.

$$\frac{\text{Individual's outcomes}}{\text{Individual's own inputs}} = \frac{\text{relational partner's outcome}}{\text{relational partner's inputs}}$$

Although Adams' formula has been criticized for its simplicity, it has and continues to posses "nearly unanimous" use.[71]

The elements of Equity theory as applied to automatic aid fit well. In the automatic aid agreement, responses to another's jurisdiction (input) as compared to receiving aid from another jurisdiction (output from referent other) formulate a ratio. An example would be two jurisdictions that mutually respond to one another's incidents. If department A responds to Department B 1,000 times a year, and conversely, department B responds to A 900 times, the resulting formula is inequitable.

$$\frac{900(\text{A output})}{1000(\text{A input})} \neq \frac{1000\ (\text{B output})}{900\ (\text{B input})}$$

The resulting equation is not equal, and therefore, inequity must be addressed. The consequences of inequity are a crucial element of equity theory. In general, inequity creates tension and how one reacts to the tension is dependent on many variables. The three basic reactions to inequity include: (a) Take action to achieve equity, (b) Take action to reduce inequity, or possibly (c) "Leave the field" or end the relationship.[72] Research has shown that humans can increase or decrease effort to match any perceived dissonance.[73] How one measures the ratio determines the perception of equity. Clearly in a mutual response system, inputs and outputs are a known quantity and easily processed.[74] A key element to the equity formula is time as past and future performances affect equity determination.[75]

---

[71] Richard Harris, "Pinning Down the Equity Formula." *Equity Theory: Psychological and Sociological Perspectives.* (1983): 237.

[72] John Adams, "Toward an Understanding of Inequity." *Journal of Abnormal and Social Psychology* 67 (1963):422–436.

[73] Ibid., 433.

[74] Colin F. Camerer and Kenneth R. MacCrimmon, "Underground and Overpaid: Equity Theory in Practice" (1983): 297.

[75] Ibid., 318.

G.   SUMMARY

By examining the fire service, other industries, academic research, and mutual aid theory, one can see that many agree on the need for collaboration and resource sharing. With so much written in support of the idea, it is surprising that some still resist collaboration in the homeland security environment. Some contend that the carrot and stick method of tying federal grant dollars to adoption is most successful. The 2004 Government Accountability Office report conclusion that some jurisdictions failed to work collaboratively and the government may be able to influence this behavior through grant allocation.[76] Examining situations that succeeded in adopting a collaborative, mutual aid program can glean a lesson for others to follow. This may provide valuable insight to achieve widespread adoption of automatic aid.

The literature generally supports the argument that homeland security organizations should be collaborating to solve problems. The variety of examples provided in emergency services, utilities, and public health promoted the issue. How one perceives and reacts to inequity is an important aspect of this research. Physical locations, limited resources, and the unpredictable nature of emergencies make it difficult for mutual or automatic aid systems to be in perfect balance.

Gaps in the literature exist regarding research on failed fire service mutual aid experiences. Although news stories exist, no in-depth examination of the situations exists. As complex systems with many elements and interactions, it is impossible to speculate on the underlying causes of the failures.

---

76 U.S. Government Accountability Office, Effective Regional Coordination Can Enhance Emergency Preparedness (2004), 9, http://www.gpoaccess.gov/gaoreports/index.html.

III.   METHOD

This thesis explores the concept of automatic aid as a response model through a case study, along with the benefits and challenges some agencies experience through the adoption of the practice. The research investigates the extent of influence automatic aid has on emergency response and homeland security responsibilities. It is consistent with the Department of Homeland Security's core mission to "Ensure resilience to disasters."[77]

The overarching research question: In an era where few jurisdictions can afford to run a self contained emergency response program, how and in what ways does an automatic aid model overcome limits, provide sufficient response, and constrain costs to any particular jurisdiction?

The hypothesis of this study is that equity theory best describes how jurisdictions maintain a successful automatic aid agreement. The nested questions include: (a) How does the automatic aid response model work, (b) What benefits and challenges do participants experience, (c) What factors influenced the adoption and continuation of automatic aid.

A.   RESEARCH DESIGN

To analyze the issue, the multiple-case-study, or comparative case study supported by a collection instrument, was used. Robert Yin writes that a "distinct need for case studies arises out of the desire to understand complex social phenomena".[78] A focused one-on-one in-person interview of subject matter experts allowed for collection of perceived causal inferences and explanations. This method allowed the researcher to investigate a set of circumstances that define an organization in depth and within its own context, as it operates and interacts within an emergency response system. Interviews

---

[77] Department of Homeland Security. *Our Mission,* http://www.dhs.gov/our-mission, accessed 10/11/12.

[78] Robert Yin, *Case Study Research Designs and Methods,* 4th Edition. Thousand Oaks California. Sage Publications. 2009, 4.

provide vital insight to a case and are an "essential" source.[79] Additional sources of evidence include archival records such as budgets, administrative documents, and consultant reports.

The multiple case study method was used to illustrate certain topics in a descriptive mode as they relate to three experiences within the Northern Virginia Mutual Response (NMVR) Agreement. Such a method is desirable when focusing on the "why."[80] The three experiences include an urban department (Alexandria), an urban-suburban department (Arlington), and a suburban-rural department (Loudoun). Within each case, the distribution allows for different response patterns based on geography, jurisdiction, and command level.

B.   CASE SAMPLE SELECTION

There are many successful examples of Automatic aid across the United States. The NVMR Agreement was selected because it is a well-established, successful model and is easily accessible to the researcher. It also provides a variety of experience between an urban, urban-suburban, and a suburban-rural fire department. The variety of experience is desirable to show that the system is applicable in a variety of settings.

The Northern Virginia Regional Commission is made up of fourteen departments including the City of Alexandria, Arlington County, Fairfax City, Fairfax County, Fauquier County, Loudoun County, Manassas City, Manassas Park, Prince William County, Stafford County, Fort Belvoir, Metropolitan Washington Airports Authority, Marine Corps Base Quantico, and Fort Meyer.

C.   DATA COLLECTION

Data from selected agencies included history of the automatic aid agreement, jurisdiction and organizational structure, resource organization, and budget. The data included a review of published documents including automatic aid agreements, administrative documents, budgets, consultant reports, and department web sites. The

---

[79] Yin, *Case Study Research Designs and Methods*, 106.

[80] Ibid.,10.

documents provided data to answer the first research question, (a) "How does the automatic-aid response model work." This research was supported by one-on-one, in-person interviews to gather qualitative data on the NVMR Agreement.

The interview methodology was designed to assist in answering the second and third research questions that states, (b) "What benefits and challenges do participants experience?" and (c), "What factors influence the adoption and continuation of automatic aid?" The method used to answer that question was to conduct one-on-one in-person interviews with subject matter experts. The individuals selected were key leaders who have experience with automatic aid responses and were asked about their perceptions of the agreement. To objectively evaluate the NVMR Agreement, each of the three levels of command will include each jurisdiction's perspective. The categories for the interview will be:

Tactical – Leaders who have been responsible for direct supervision of units operating in a cross jurisdictional (automatic aid) response. This paradigm provides first-hand perspective of interagency collaborative effort and achievement without the filter of upper management. Specifically, how the units interact with one another. Individuals selected will have the rank of Captain.

Operational – Leaders who have Commanded incidents in a cross jurisdictional (automatic aid) response. This paradigm provides for a command level perspective regarding units from different jurisdictions in terms of both collaborative interaction, and a comparative view. Specifically, this shows how units from different agencies perform both independently and as part of a team. Individuals selected will have the rank of Battalion Fire Chief.

Executive – Highest-ranking department officer in charge of total management of the organization. This paradigm provides the organizational perspective of overall success of automatic aid but also the agency specific assessment of the program. Specifically, an objective analysis is made by individuals who are not influenced by daily interaction. Individuals selected will have the rank of Fire Chief.

The interview subjects were asked specific questions in an attempt to answer the second and third research questions. The interviews lasted approximately one hour each and were asked in open-ended format to illicit spontaneous responses. The data was collected and analyzed qualitatively to identify themes. The specific questions asked:

1. How long have you participated in Automatic Aid?
   a. With whom?
2. Tell me how you came to participate in an automatic aid agreement.
   a. Was there a sense of urgency?
   b. What obstacles did you overcome?
   c. Were there any concessions?
3. Tell me how the agreement works.
4. What do you put into the agreement?
5. What benefits do you enjoy from the agreement?
6. Do you think there is a balance between what you put into the agreement and what you get out of it?
7. Are there any members of the agreement that do not feel the agreement is equitable? If so, who?
8. Who are the main supporters of the agreement?
9. How have they supported the agreement?
10. Tell me about the challenges of the agreement.
11. Tell me about any antagonists.
12. Tell me about their objections.
13. Tell me about associated costs from the agreement.
14. If you could change one thing about the agreement what would it be?
15. Tell me about other collaborative efforts between jurisdictions.
16. Are there jurisdictions with whom you do not interact but would like to?
17. Is there anything else you would like to share?

D.   DATA ANALYSIS

Each interview was fully transcribed from recordings and field notes. A detailed qualitative analysis of the data was conducted after the collection phase. Developing and applying inductive codes and Thematic Mapping allowed the researcher to identify common themes and unique perceptions. The analysis included data manipulation to discerning patterns and trends from the qualitative data and describes what the data shows. Inferences to causal relationships were sought and examined for applicability, especially in terms of equity, leadership, trust issues and collaboration as they related to efficiency and increased capacity.

The analysis triangulated data from three levels of three organizations, along with various documents to describe experiences and causes within the NVMR Agreement. It considered the available evidence, addressed rival theories and interpretations, and focused on the relationships within the agreement and the influence of equity theory.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. CASE STUDY OVERVIEWS

A. ALEXANDRIA FIRE DEPARTMENT BACKGROUND

Alexandria is a city in Northern Virginia, located along the banks of the Potomac River. Originally part of L'Enfant design for Washington DC, the Virginia portion was ceded back to the state in 1846. Incorporated in 1852, Alexandria covers an area of 15.2 square miles, with a population of 140,000 making it a densely populated urban area.[81] Median income is $80,847 and 60 percent have a four-year degree or higher.[82]

The Alexandria Fire Department was founded in 1855 and now has 273 full time employees. The department operates nine stations with a budget of $35.8 million.[83] They provide a "full range of modern fire department services," including fire suppression, technical rescue, marine, hazardous material response, emergency medical services, code enforcement, and emergency management.[84]

B. ARLINGTON FIRE DEPARTMENT BACKGROUND

Arlington County, centrally located in the Washington Metropolitan area, describes itself as an urban county with a robust transportation system and skilled workforce. Covering 26 square miles, it is the smallest county in the United States according to the National Association of Counties and had a population of 207,627 in the 2010 census.[85] Arlington is a highly educated jurisdiction with 70 percent possessing a bachelors degree or higher. The largest employers included defense

---

[81] City of Alexandria, City Charter, accessed 10/8/12 from. http://library.municode.com/index.aspx?clientId=10349.

[82] City of Alexandria Department of Planning and Zoning. *Alexandria 2012 Census Data* Profile. Alexandria, VA: Author, 2010.

[83] City of Alexandria. FY2012 Proposed Budget al.exandria, VA: Author, 2011, 14–18.

[84] System Planning Corporation, *Assessment of Fire Department Resource Locations, Staffing, and Facilities: Alexandria Virginia*. Arlington, VA: Author, 2007, 5.

[85] Arlington County Department of Community Planning and Housing. *Profile 2012*. Arlington, VA: Author, 2012.

contractors (Lockheed and Deloitte) and the federal government. Notable landmarks include the Pentagon with 23,000 military and civilian employees, National Airport, and Arlington National Cemetery.

The Arlington County Fire Department operates from 10 stations with a workforce of 319 employees. In fiscal year 2012, the budget was 50.4 million dollars. The department provides a combination of education, prevention and effective response to fire, medical and environmental emergencies.[86] Evidence of Arlington's progressive nature includes the hiring of the nation's first female firefighter in 1974 and development of the first Metropolitan Medical Strike Team in collaboration with the U.S. Public Health Service.[87]

The response to the attack at the Pentagon on September 11, 2001 was commanded by the Arlington County Fire Department. The response, generally considered a success, is described in the after action report as:

> This incident produced a unique paradigm of response considerations and requirements. It was a major fire and rescue operation within the broader context of a terrorist attack. This terrorist attack occurred in Arlington County, VA, but at a U.S. military facility under the direct control of the Secretary of Defense. The incident response engaged a large number of agencies, organizations, and individuals from all levels of government and the private sector, and it lasted for an extended period.

Among the "critical" elements to the successful response to the Pentagon were Arlington's professional command and control, as well as the established mutual response policy.[88]

---

[86] Arlington County. Arlington Virginia About the Fire Department, accessed 10/10/12, http://www.arlingtonva.us/Departments/Fire/edu/about/FireEduAboutAbout.aspx.

[87] Ibid.

[88] The George Washington University, *Observing and Documenting the Inter-Organizational Response to the September 11th Attack on the Pentagon,* accessed 10/10/12, http://www.gwu.edu/~icdrm/publications/nsf911/response.html, 10.

C. LOUDOUN COUNTY FIRE & RESCUE BACKGROUND

Loudoun County Virginia is the wealthiest county in the United States. With a population of 317,311 and a land area of 520 square miles, it is a combination of suburban and rural. Notable attractions include Washington Dulles International Airport and Redskins Park in Ashburn.

The fire department operates from 20 stations with a workforce of 500 career and 1500 volunteer firefighters. The annual budget in FY12 was 52.7 million.[89] Loudoun County Fire & Rescue is an all-hazards agency with services including emergency management, emergency response, fire training, fire prevention and investigation, swift water rescue, and wildland firefighting.

---

[89] Loudoun County, *Fiscal Year 2012 Adopted Loudoun County Budget, accessed* 10/15/13, http://www.loudoun.gov/index.aspx?NID=1474.

THIS PAGE INTENTIONALLY LEFT BLANK

V. NORTHERN VIRGINIA MUTUAL RESPONSE AGREEMENT

A. CREATION

On December 5, 1975, the Northern Virginia Board of Supervisors voted to accept the mutual response proposal put forth by the fire chiefs committee. News accounts of the day indicated resistance from within the fire departments, especially Alexandria.[90] Reasons for opposition included learning new territory, equipment and terminology, as well as aligning communications systems. The primary advantage listed in the news story was cost savings, not improved or more efficient service.

B. ORGANIZATIONAL DESIGN

The Northern Virginia Fire Chiefs Committee operates under the auspices of The Northern Virginia Regional Commission. The Commission was created to "explore shared concerns related to professional local government management in Northern Virginia, as well as opportunities for collaboration or mutual support among the jurisdictions." To that end, the programs and services include:

- Aging
- BRAC (Defense Base Closure and Realignment Commission)
- Data and Maps
- Environmental Programs and Projects
- Fire & Rescue Departments of Northern Virginia
- Health
- Helping Resources
- HIV/AIDS
- Housing and Homelessness
- International Partnerships
- Land Use and Transportation
- Legislative Program

---

[90] By Joe RitchieWashington, Post, Staff Writer, "Fire Protection Plan Set in N. VA," *The Washington Post (1974-Current File),* Dec 5, 1975. ProQuest (146346547).

- Potomac Heritage National Scenic Trial

- Regional Forums

The NOVA Fire Chiefs Committee provides policy recommendations regarding a variety of public safety issues including hazardous materials emergencies, technical rescue, fire prevention code enforcement, and response to weapons of mass destruction.

Achievements of the group include support to the Northern Virginia Emergency Services Mutual Response Agreement (NVMR). That agreement was originally signed in 1975 and has had several updates. Resolved issues include establishment of coordinated technology, such as 911 centers and interoperable Computer Aided Dispatch systems (CAD), data and mapping systems and radios, adoption of standardized incident management based on national standards and common operational response procedures, and equipment unified the region. Several committees further enhance the ability of the agreement to permeate the culture of the NOVA fire departments and establish regional initiatives. The organization of the committee has similarities in the NIMS with an operations, logistics, planning, EMS section, training, communications, public information, IT/GIS, and technical writing groups.

The agreement requires jurisdictions to "engage in mutual response whenever and wherever appropriate".[91] However, the agreement delineates between Tier One and Tier Two jurisdictions with the difference being that Tier Two jurisdictions are "currently unable to fully comply" but have pledged to work toward that goal.

---

[91] Northern Virginia Emergency Services, Mutual Response Agreement, 2009, 3.

Table 1.   NVMR Agreement Membership Tiers

Tier One	Tier Two
Arlington County	City of Alexandria
City of Fairfax	City of Manassas Park
City of Manassas	Fauquier County
Fairfax County	Loudoun County
Fort Belvoir	Metropolitan Washington Airports Authority
	Prince William County
	Stafford County
	Fort Myer
	Marine Corps Base - Quantico

Definitions within the agreement specify the land area covered, defines emergency services to include fire suppression, emergency medical services, technical rescue, hazardous materials response, and other related types of emergencies. Automatic dispatch of the closest appropriate unit, regardless of jurisdictional boundary lines, is a key element.

In some cases, jurisdictions are eligible to recover mitigation costs from responsible parties or under declared emergencies. However, such events are not the norm and in most cases, jurisdictions are not financially indebted to one another for responses.

Indemnification is explicitly covered under the agreement. This provides legal protection to all parties operating under and within a mutual response incident. An additional feature includes the right to change or terminate participation and the agreement outlines such procedures.

The organizational design provides for no payment of services. Everything is in kind. The agreement leaves open the possibility of inequity, as there is no way to predict call volume between jurisdictions.

C.   NVMR SYSTEM PROCESS

The system is built on trust between jurisdictions and begins with adherence to the NIMS Incident Command System and NVMR—operational procedures are required under the agreement. Paramount to effective operations is the linkage of each Public Safety Communications Center with one another.

Long before NIMS became the national standard, the members of the NVMR Agreement collaborated to address common terms, equipment, radios, and SOGs. The use of common Standard Operating Guidelines is an important feature of the NVMR Agreement. The manuals cover a full range of topics including:

- COG Railroad Emergency Response Manual,

- Command Officer Operations,

- Elevator and Escalator Emergencies Manual,

- Emergency Incident Rehabilitation (2nd Edition),

- Engine Company Operations,

- Flammable Liquid Emergency Incidents,

- Garden Apartments,

- High Rise Buildings,

- Inland Water Rescue and Emergencies Manual,

- Metrorail Emergencies,

- Mid-rise Building Fires,

- Multiple Casualty Incident Manual,

- Metropolitan Washington Airport Authority Aerotrain Response Manual,

- Rapid Intervention Team,

- Residential, Commercial, Townhouse and Rowhouses,

- Roadway Incidents,

- Single Family Dwellings,

- Strip Shopping Centers,

- Utility Emergencies,

- Water Supply for Suburban and Rural Firefighting,

- Weapons of Mass Destruction.

Supporting the documents is a website dedicate to the NVMR Agreement. The site includes electronic versions of the documents, PowerPoint training aids, and quick reference guides.[92]

D.   KEY INTERVIEW FINDINGS

The qualitative nature of this research project presents challenges in evaluating the effectiveness of an automatic aid response system, as in the NOVA agreement. Comparing response data between jurisdictions is inadequate to understand how a system works and thrives because it fails to consider what efforts go into the care and feeding what is required to maintain/ of the relationships.

Operating manuals, newspaper articles, and personal interviews provided a foundation of how automatic aid systems, in particular, the NOVA agreement, work. The evidence to support the case study included interviews of three levels of command for their intimate knowledge and experience within the system. Interview participants represented the tactical, command, and executive levels of their respective organizations (Loudoun County, Arlington County, and the City of Alexandria). Three company level officers (one Lieutenant and two Captains), three Battalion Chiefs, and three Fire Chiefs, one from each of the selected jurisdictions, provided qualitative data that support the relationship dynamics presented in this thesis. The interview participants have intimate, first hand experience operating in an automatic aid response system and the diversity of rank and jurisdiction (one urban, one urban/suburban, and one suburban/rural) broadens the diversity of experience. Formally scripted questions were asked of each participant that references their experience and knowledge of receiving or providing automatic aid.

During the course of the research, it was discovered that the collaborative nature of the NVMR Agreement improves emergency response in each participating jurisdiction. Automatic aid stipulates that the closest unit, regardless of jurisdiction, is dispatched to emergency calls. NVMR is a system that uses common radio frequencies, common operating guidelines, and shared resources to increase the region's capacity to

---

[92] Northern Virginia Regional Commission, *About NVRC*, accessed 10/17/13, http://www.Novaregion.org/index.aspx?nid=627.

respond to emergencies. Membership in the agreement has created interaction in a collaborative, trust-rich environment that has benefited all jurisdictions. The collaboration, organizational design, and processes create a synergistic response.

1. Common Themes

There were sixteen standard scripted questions presented to each participant. Each interview subject was asked to begin with a biographical summary of his or her professional career. Following this introduction, each interview followed the written questions format contained in Appendix A. Information that was relevant to this study generated responses to these formal questions and is referenced in Appendix B.

The analyzed raw data appears in Appendix A. Each interview is reviewed and text coded to identify emergent qualitative themes. The qualitative factors that contribute to the relationship dynamic found in the NOVA agreement were consistent with documentation presented earlier and through all interviews conducted for this study. The four common themes identified from the interview participants were: Collaboration, trust, equity, and leadership. These specific findings are expanded on next.

a. Collaboration

The interviews identified four common themes that persisted in the comments by the individuals. These themes included collaboration, equity, leadership, and trust. The first theme, collaboration was by far the most mentioned element and includes common responses where the closest unit dispatched regardless of jurisdiction, common operating manuals and SOGs, common equipment such as radios, sharing resources throughout the region, and training together across jurisdictional boundaries.

Emergency response in areas that have convergent jurisdictional borders is ripe for duplication of effort, lack of communication between jurisdictions, and general inefficiency as each jurisdiction addresses its own needs. The region of Northern Virginia has many convergent jurisdictions but avoids these issues. The NVMR Agreement reduces these factors through collaboration. Arlington County Fire Chief Jim Schwartz, describes the concept behind the automatic aid agreement as "it would behoove all of us

to belong to an agreement that recognizes exchange of resources. It would be better for the citizens and safer for responders."[93] The end product where the citizens benefit is in the automatic aid responses. Battalion Chief Kevin Stiles describes the system, as "the closest unit, regardless of jurisdictional boundary, will be dispatched."[94] This key feature was noted by all interview subjects and provides for the closest resource "without regard to the name on the door" as noted by Battalion Chief Matt Herbert. An attempt to bring consistency to the responding units was outlined by the "NOVA manuals." A collaborative team involving each jurisdiction with a goal of establishing a common standard operating guideline created these manuals. Schwartz indicated that what started as a Fairfax County project swelled to involve their partners. "We decided to do the manuals regionally." Byron Andrews, a Captain with the Alexandria Fire Department agreed that the goal was to "bring together operational consistency."[95] The agreement has become part of the culture now. Captain John Delany of Arlington states that he "expects to go to Alexandria or Fairfax everyday,"[96] and Herbert expands on the close interaction by noting, "crews have dinner, drill and do building walk-through together."[97] Adam Thiel, Alexandria's Fire Chief provided insight to the regional problem with "there isn't a jurisdiction in the region that can stand alone in a really bad day."[98]

b.   *Equity*

Equity was another theme and was most often described as automatic aid in terms of a give and take relationship (of emergency response resources) that ebbed and flowed. Additional features of the equity theme include the ratio of give to receive and how the emergency response system balances overall despite local inequities.

In any exchange, one must be concerned with the equity of the transaction. In the NVMR Agreement, sending the closest unit—regardless of jurisdiction—

---

[93] James Schwartz, interviewed by Raymond C. Gretz, Arlington, VA, November 8, 2012.

[94] Kevin Stiles, interviewed by Raymond C. Gretz, South Riding, VA, November 15, 2012.

[95] Byron Andrews, interviewed by Raymond C. Gretz, Alexandria, VA, November 17, 2012.

[96] John Delany, interviewed by Raymond C. Gretz, Leesburg, VA, November 8, 2012.

[97] Matt Herbert, interviewed by Raymond C. Gretz, Arlington, VA, November 15, 2012.

[98] Adam Thiel, interviewed by Raymond C. Gretz, Alexandria VA, November 21, 2012.

influences the ratio of given to receive for each jurisdictional relationship. As Adam Thiel points out, "there are sections of Alexandria that are served by Arlington units and there are areas of Arlington where our station is closest."[99] He further admits that an acceptable ratio is close to 1–1, but it is off, and he typically receives aid on two for every one call he gives. The situation in Alexandria is not unique. Examples from each jurisdiction identify situations where one jurisdiction provides more help than it receives from the same jurisdiction. Brower noted "I know what Fairfax felt like 25 years ago with the Route 50 situations. They kept sending resources and we couldn't. That is what's happening to us on the west end."[100] Herbert describes how Arlington is unable to pull from the District of Columbia due to no working agreement and as a result, they pull from Alexandria and Fairfax. In some cases when they "pull too hard on Fairfax, they turn off the aid"[101] Each interview subject was able to identify a situation that was imbalanced.

Matt Herbert supports the common knowledge of the disparity in his comment, "Everybody knows there will be some inequity." [102] However, Jim Schwartz posits that one must look at the system as a whole, rather than the individual relationships. "If you look at the totality, there is balance there," noted Schwartz.[103] This sentiment was supported across the jurisdictions and down the chain of command. Loudoun County Battalion Chief Kevin Stiles' comment, "holistically, it works because it's an average" mirrors Schwartz' statement.[104] In different ways, each interview subject articulated a feeling that John Delany puts well with "we have to look at the greater good."[105] The experiences of each jurisdiction indicate a willingness to accept an

---

[99] Adam Thiel, interviewed by Raymond C. Gretz, Alexandria VA, November 21, 2012..

[100] W. Keith Brower, interviewed by Raymond Gretz, Leesburg, VA, November 6, 2012.

[101] Matt Herbert, interviewed by Raymond C. Gretz, Arlington, VA, November 15, 2012.

[102] Ibid.

[103] James Schwartz, interviewed by Raymond C. Gretz, Arlington, VA, November 8, 2012.

[104] Kevin Stiles, interviewed by Raymond C. Gretz, South Riding, VA, November 15, 2012.

[105] John Delany, interviewed by Raymond C. Gretz, Leesburg, VA, November 8, 2012.

imbalanced system; Adam Thiel's lucid observation "It doesn't have to be perfect to add value" provides an understanding of why the system is accepted and why it works.[106]

c. *Leadership*

The third theme is leadership and how it affected the development and maintenance of the agreement. The interview subjects discussed the creation and acknowledged the requirements and limitation of the agreement. Schwartz describes the results as a "massive" achievement through financial and governance collaboration.[107] The elected leaders are reportedly all in favor of the arrangement and support the jurisdictions in their efforts to prepare for regional capabilities such as new stations, common manuals etc.

The beginning of the agreement is generally attributed to the Skyline Incident when a building collapsed at an area where Alexandria, Arlington and Fairfax all converge. The duplication of resources led to cooperation by the jurisdictions to develop a unified response plan. Although the exact process to form the agreement is not covered in this research, the basic impetus is identified and current operating practices include steering committees at several levels of governance are addressed by the interview subjects. The Board of Supervisors, fire chiefs, and operational level committee work maintain the agreement and enjoy broad support.

At the executive level, the agreement was acknowledged as "a very complex, networked group of jurisdictions and organization with different legal authorities and structures and that policy makes a big difference."[108] Thiel credits the leadership that developed the policy work. Schwartz too, credits the leadership of Glenn Gaines in particular (former Fairfax County Fire Chief). Gaines is credited with

---

[106] Adam Thiel, interviewed by Raymond C. Gretz, Alexandria VA, November 21, 2012.

[107] James Schwartz, interviewed by Raymond C. Gretz, Arlington, VA, November 8, 2012.

[108] Adam Thiel, interviewed by Raymond C. Gretz, Alexandria VA, November 21, 2012.

encouraging the jurisdictions to abandon the restrictions and limitations originally set up in the agreement. By the late 1990s, Gaines' recommendation was adopted and the limitations were dropped.[109]

Today, the agreement is an integral part of emergency response in Northern Virginia. Thiel recognizes that " as the executive, I make decision based on how it will impact the agreement."[110] The process has become seamless and as Delany points out, "It's the right way to do business, the mature way to do business and I'm surprised that more folks don't do it."[111] Broad support for the agreement is found at the highest levels of government. The Board of Supervisors (elected officials) is a "huge supporter."[112] The fact that the "rig may not say Arlington" or whatever jurisdiction one is in, is known and expected by the Board. [113]

d.   *Trust*

The final theme provides interesting insight to how the agreement works. More than any other category, success of the agreement is credited with the trust that comes from knowing each other and the close personal relationships. The social aspect and trust leads to acceptance of system deficiencies like inequity and helps overcome cultural challenges as different jurisdictions work together. Chief Brower articulated this well when he said, "None of this works without the personal relationships you build through the chiefs working together."[114] Reliance on personal relationships is critical as noted by Michael Brown, "you have to get to where the people know each other and trust each other." Such relationships are necessary before large-scale events to facilitate seamless operations. John Delaney recognizes that "you have to build a relationship well in a advance of the big one." Schwartz, described his daily interaction with other jurisdictions as "we lived the agreement everyday…eat dinner together, run calls

---

[109] James Schwartz, interviewed by Raymond C. Gretz, Arlington, VA, November 8, 2012.

[110] Adam Thiel, interviewed by Raymond C. Gretz, Alexandria VA, November 21, 2012.

[111] John Delany, interviewed by Raymond C. Gretz, Leesburg, VA, November 8, 2012.

[112] Michael Brown, interviewed by Raymond C. Gretz, Alexandria, VA, November 6, 2012.

[113] Matt Herbert, interviewed by Raymond C. Gretz, Arlington, VA, November 15, 2012.

[114] W. Keith Brower, interviewed by Raymond Gretz, Leesburg, VA, November 6, 2012.

together" and surmised, "There is a social aspect. I think it's about trust." Thiel's observation that "it's less about the technology and more about the human factors and the relationships" succinctly describes the common thought.

However, despite the personal relationships, some tension was evident among the younger interview subjects who seem slighted that the deviations from the prescribed procedures take place. Ideally, the region uses one set of SOGs, yet exceptions continue to arise. This creates a bit of tension among participants but does not seem to influence the overall system.

2. Summary

There was consensus among all interview subjects that the current NVMR Agreement works well. The agreement is a living document that has matured over the years and requires constant "care and feeding" as described by Adam Thiel. The subjects described a range of collaborative endeavors, significant leadership, and well-established personal relationships. These factors create a social identity that transcends the jurisdictional identity for the larger regional identity. It is the regional identity, socially constructed, that enables each jurisdiction to forgo situational inequities. For example, when Loudoun County gives more aid to the western neighbors than it receives back, the regional identity overrides the local identity. It is acceptable because Loudoun may get more help on the southern, or eastern border, and as a regional system, it balances out. The system works and many subjects feel more jurisdictions should follow the NVMR example.

However, the NVMR Agreement consists of jurisdictions that are among the most educated and wealthy in the country. How these factors influence acceptance of automatic aid should be examined. Future research should include a demographic that is not as wealthy or highly educated.

There was less consistency of opinion regarding the uniformity of operations. Although most subjects describe the system in favorable terms, growing pains are evident. Thiel pointed out that it is a fallacy to believe that everyone should be the same; that the individual identity of each jurisdiction does matter. Some of the younger subjects

seemed to wrestle with the disparity of conducting operations by the manual yet witnessing local exceptions. The NVMR Agreement indicates that there will be uniformity in operations, but exceptions clearly exist. The duality of NVMR Agreement members allows them to maintain individual identity yet cooperate within the regional system. Despite the issues with operation uniformity, the overall automatic aid system works well.

The underlying theme drawn from these interviews was that despite an imperfect system, equity could be reached through leadership, collaboration, and trust. The NVMR example is an example 40 years in the making. The iterations of the agreement have varied in terms of commitment but are clear examples of what one can achieve.

VI. RECOMMENDATIONS AND CONCLUSION

A. BENEFITS OF AUTOMATIC AID

The purpose of this research was to assess the use of automatic aid as a response model and how that influences the Homeland Security goal of resilience. Jurisdictions that standalone or rely on mutual aid for emergency response assistance are not adequately prepared for the next crisis. This research shows the advantages and efficiencies of automatic aid that include decreased response times to emergencies, better working relationships with neighbors, and possible cost savings. It is difficult to argue against sending the closest resource to an emergency. Each jurisdiction currently does so but is confined within its political border. By erasing the border, one can take a broader view, apply the same principle to a larger area, and capture the capacity of neighboring jurisdictions. The research indicates that a prolonged working relationship creates a high level of familiarity and trust. Such relationships provide for better working relationships. Cost savings is an issue that always interests public officials. As good stewards of public funds, duty requires one to seek out the efficient use of money. Sharing resources and increasing capacity using automatic aid can save money.

B. RECOMMENDATION

The goal of the following recommendations is to increase use and acceptance of automatic aid as an emergency response model as derived from the evidence of the successful NVMR Agreement. It encourages abandonment of myopic jurisdictional based response policy in favor of a cross-jurisdictional approach.

    1.   The first recommendation is for jurisdictions to look at NVMR as a model for what can be accomplished. The NVMR Agreement provides organized working groups, clear lines of communication, unified operational procedures, and efficient service. The NVMR Agreement is a model of how to apply the concept of automatic aid and provides an excellent example to other jurisdictions.

2.   The second recommendation is to encourage jurisdictions to explore and look for unconventional means to achieve equity. Just as automatic aid pulls back the borders of jurisdictions, one can pull back the equity equation to include or consider all services. If the fire service equitation is imbalanced, perhaps including police, public works, or even schools could provide a balanced relationship. Such a solution requires a great deal of trust and unorthodox thinking.

3.   The last recommendation is to follow the provided model to implement-educate, build consensus, and monitor.[115] Recognizing barriers, such as unwillingness to seek input or help and unable to find expertise or transfer knowledge, is important to applying appropriate strategies.[116] The value of education on public opinion is well documented and may be applied to fire service professionals and the public alike. Bernays (1928) provides the example of a shoe salesman's realization that education of foot care would cause others to seek out his product. Similarly, if one educates the pubic on automatic aid, they will seek it out for their community.

C.   IMPLEMENTATION IMPLICATIONS

Fire departments rely on teamwork to extinguish fires. Although a small fire may only require one fire engine to extinguish it, the firefighters on the engine operate as a team. If the fire requires more help, another fire engine responds, and teams up with the first. A building on fire, such as a house, requires the response of several fire engines, and thus the team gets larger and so on.

Fire protection is a distributed commodity in that each city, town or jurisdiction has its own department. It is incumbent on the jurisdiction to strategically locate their

---

[115] Rouse, "Managing Complexity," 143–165.

[116] Nitin Nohria, and Rakesh Khurana, *Handbook of Leadership Theory and Practice: An HBS Centennial Colloquium on Advancing Leadership*. Boston, Mass: Harvard Business Press, 2010, 27.

resources to provide a minimum response to each area. However, once a jurisdiction's resources are depleted, calling a neighboring jurisdiction (mutual aid) for assistance is the typical solution.

Automatic aid is a type of mutual aid. The concept of mutual aid is quite simple in that when a jurisdiction needs help, they call for assistance and help is rendered by another jurisdiction or agency. Usually, this neighboring community has a required written agreement.

How automatic aid differs is a small nuance with significant consequences. In an automatic aid response model, the assistance is "requested" before an event as a pre-established assistance rather than a case-by-case request as found in a mutual aid agreement. Another vital feature of automatic aid is that it ignores political boundaries and relies on geography. The closest units respond, regardless of jurisdiction. As an emergency response model, Automatic Aid is collaboration between jurisdictions and "right sizes" the problem.[117] The same logic each jurisdiction utilizes for firehouse location (geography) expands past political borders.

Equity theory best describes how jurisdictions sustain an emergency response model of automatic aid. Fire engines operate as elements within a fire department, within the larger emergency response system, within an even larger (Homeland Security) system. Operating within a multi-agency, emergency response system requires some give and take concerning how "fair" the system is to members. The nature of this interaction among groups makes Equity theory suitable for analyzing the relationship.[118]

To save lives and reduce property loss, firefighters have to arrive quickly.[119] The need is so great that response time is part of national standards. The National Fire Protection Association (NFPA) requires, by Standard 1710, to "deploy an initial full

[117] Bratton and Tumin, *Collaborate or Perish*!, 71.

[118] Moghaddam, *Multiculturalism and Intergroup Relations*, 111.

[119] Insurance Services Office. *Public Protection Classification*, accessed 10/17/13. http://www.isomitigation.com/ppc/3000/ppc3014.html#.UFnhShiG7Ww.

alarm assignment within a 480-second travel time to 90 percent of the incidents."[120] How jurisdictions comply with the 8-minute benchmark can vary. First, to define a "full alarm assignment" one must consider the team concept. A typical full alarm assignment in Prince Georges County, Maryland is four engines, two special services, one battalion chief, and one ambulance. The use of four or even five engine companies is typical throughout the Washington DC region. Sending the four closest units in the middle of a jurisdiction does not require assistance through mutual or automatic aid. However, on the edges of jurisdictions, opportunity exists to take advantage of a neighboring jurisdiction's resources. Figure 1 shows the population density concentrated along the borders.

---

[120] National Fire Protection Association, *Codes and Standards*, accessed 10/17/13http://www.nfpa.org/itemDetail.asp?categoryID=999&itemID=24346&URL=Codes%20&%20Sta ndards/Standards%20development%20process/&cookie_test=1.

Figure 1.   Virginia and Maryland Population Density

Given that the distribution of people straddles the borders, one can understand how services would transcend borders.

Implementing an automatic aid response model within a jurisdiction that currently does not use it would be difficult. It is a disruptive change for those who do not currently participate in automatic aid response models. Barriers that exist may include those fire departments that would participate in the agreement, the political (elected and appointed) officials of each jurisdiction, citizens on both sides, and media (regular and social).

Change will create confusion and uncertainty as existing patterns and relationships shift.[121] However, when one considers the system features of the emergency response system, automatic aid is simply a change of the rules.[122] By changing who responds to where, and adding adjacent jurisdictions, the system will self organize.[123] Indeed, the new rules can produce "complex and delightful" patterns.[124]

The first steps to implementation are to identify the need and build trust. A graphical demonstration of what an automatic aid response could look like is one way to draw attention to the idea. By providing a glimpse of what could be, one hopes to raise curiosity and question the possibilities. Following Covey's Smart Trust Model would provide a stable platform from which to build. His Five Actions of Smart Trust include: (a) Choose to believe in smart trust, and (b) Start with the self. These require one to overcome past experiences that adversely affected the belief in trust.[125] The next two elements, (c) Declare your intent, and (d) Do what you say you are going to do are the core of a trust relationship. They establish and maintain an upward cycle of trust.[126] The final element, (e) Lead out in extending trust to others enables one to empower others and generate reciprocity.[127]

A planning process similar to the one used by the Sacramento Area Water Forum in *Planning with Complexity* may provide the best transition. The steps used were planning, organization, education, negotiation and resolution of issues, and implementation.[128] This process would bring together diverse stakeholders to educate them on the issues and offer an innovative solution.

---

[121] Lee Bolman, and Terrence Deal, Reframing Organizations: Artistry, Choice, and Leadership (393). Jossey-Bass. San Francisco, California.

[122] Meadows, *Thinking in Systems: A Primer*, 158.

[123] Thomas Choi, Kevin Dooley, and Manus Rungtusanatham, "Supply Networks and Complex Adaptive Systems: Control Versus Emergence" *Journal of Operations Management* 19, no. 3 (2001): 351–366.

[124] Meadows, *Thinking in Systems: A Primer*, 159.

[125] Covey, *Smart Trust*, 105.

[126] Ibid., 173.

[127] Ibid., 208.

[128] Booher and Innes, *Planning with Complexity*, 46

Although the response model of automatic aid is a position, the interest is efficient emergency response and increased resilience. Automatic aid also changes the paradigm of who responds to each emergency by erasing the political borders. This paradigm shift takes a regional view rather than a limited jurisdictional view. Geographically based response is a foundation of the fire service that began by each jurisdiction covering ones own area. Larger departments already share the resources within the jurisdiction, and the idea of Automatic Aid takes that concept further by applying it on a regional basis. The second and third order effects of such systems are immeasurable. By sharing responsibility for response, each jurisdiction retains additional capacity (response units) that would have otherwise deployed and been unavailable. This has a ripple effect throughout the jurisdictions. Additional benefits may include increased familiarity (larger in-group) and positive public perception.

Despite the advantages of geographically based response models, the issue of authority must be addressed. Each agreement between jurisdictions would address the local needs in terms of authority. Who is charge and when must be clearly defined to remove any ambiguity and maintain order.

Diversity among collaborators would be crucial to moving forward. An automatic aid response system by definition involves more than one jurisdiction, and the effects reach beyond the fire department. Therefore, the bureaucracy of political leaders, agency heads, labor unions of the affected agencies, budget analysts, local neighborhood officials, business owners, home owners associations, hospitals, and the medical community were to all come together.[129] Educating these participants on automatic aid would be crucial for them to fully understand the issue and willingly engage in dialog.

In an emergency response system, there is much interdependence of each stakeholder on the others. Emergency responders are often represented by labor unions that negotiate with the jurisdiction on behalf of its members. Agency heads manage the local agency and carry out the vision of the elected officials. Emergency medical patients are transported to local hospitals that pick up where field treatment stopped. Businesses

---

[129] Bratton and Tumin, *Collaborate or Perish!*, 277.

and homeowners alike enjoy the protection of the emergency workers regardless if they ever actually need the service. The many stakeholders are truly interdependent on one another for both daily operations and strategic planning.

With the robust collection of stakeholders, the focus would be on the creation a strategic plan that includes defining automatic aid, setting goals, and establishing a timeline. Such a plan also acknowledges that technical issues may have to be solved on a tactical level because such issues may be important issues for some stakeholders. Legislative issues would also be addressed and amicably resolved. High level "champions" and consistent funding for the initiative would be essential elements to success.[130] This "top down" approach would be consistent with change efforts needing executive support exemplified by Jack Welch at General Electric.[131]

By following the process outlined here, one could present an idea, build support, work through contentious issues, and implement an automatic aid system. Once established, regular meetings to monitor the progress would identify potential problems.[132] Likely issues may arise from within the departments in the agreement but unintended consequences from other industries or stakeholders may arise as well. Addressing concerns in an open dialog would reduce the impact such issues could have on the agreement. As the system matures, such progress meetings would decline in frequency as acceptance grows.

The management of the strategic change proposed in this paper is known as the configuration school.[133] The key elements include: 1. Fire departments posses stable configurations. 2. Periods of stability are interrupted by occasional process of transformation that is a "quantum lead to another configuration (automatic aid). 3. Periodically, recognize the need for transformation and be able to manage that disruptive process without destroying the organization. Fire Departments have undergone

---

[130] Booher and Innes, *Planning with Complexity*, 71.

[131] Henry Mintzberg, Bruce Ahlstrand, and Joseph Lampel, *Strategy Safari: A Guided Tour Through the Wilds of Strategic Management,* NY: Free Press, 1998, 335.

[132] Booher and Innes, *Planning with Complexity*,210.

[133] Mintzberg, Ahlstrand, and Lampel, *Strategy Safari*, 305.

significant disruptive changes through the years, such as the introduction of motorized vehicles to replace horses, motor driven fire pumps to replace steam engine, hand-held radios, self-contained breathing apparatus, etc. Automatic aid is another disruptive change to nonparticipating departments must be addressed accordingly.

D.   CONCLUSION

Is automatic aid a utopia? No, but the result is a more resilient emergency response system with increased capacity. It leverages resources to maximize efficiency and has several additional benefits. Changing response partners increased familiarity and provided a platform for better working relationships. These daily, working relationships proved to be invaluable at the response to the Pentagon, and illustrate the point that a major crisis is not the time nor place to establish a working relationship. It is best done on a daily basis over time.

Departments examining the NVMR model, find a system that, at the time of this writing, has withstood the test of time and worked well. The literature offered some clues, but the case studies provided an opportunity to hear from active participants and observe real organizations operating in this type of environment. This study was the story of how the individuals and leaders of an organization adjusted their processes to achieve mutual benefit.

Through collaborative effort, the citizens have received emergency service from the closest resource, and by sharing resources; the community has been more resilient.[134] However, one must be aware of the paradox of resilience. Some say it is more resilient to have a shared responsibility and capacity. On the other hand, others argue that it more resilient to be independent and self-sufficient. This thesis sought to prove that equity theory was an important key to an automatic aid system. Rouse (2000) agrees with research indicating that "equilibrium is neither the goal or the fate" of living system, and that resiliency (adaption) is more important than stability.[135] In the context of automatic

---

[134] Booher and Innes, *Planning with Complexity*, 10.

[135] Rouse, "Managing Complexity," 143–165.

aid, those who adopted it, have adapted to a changing environment and are thus better prepared.

Creating a new social reality could result in a clash of culture and loss of identity.[136] Firefighters are competitive by nature and can trace such competition back to colonial days when fire companies competed to extinguish fires because the successful fire company would be paid for the service and receive the "glory" as well. Today, jurisdictional competition stems from historical organizational pride and social identity theory. The NVMR Agreement proves that new relationships created by the new response model increases familiarity and lessens the competitive nature of the relationship in favor of being more collaborative.

The people demand government that is more responsive and efficient service delivery.[137] The fact that some jurisdictions provide automatic aid to their "customers" creates a problem and service gap for jurisdictions that do not practice automatic aid. Increased collaboration and increased regional capacity would improve resilience and make the region, and the nation, more secure. Significant incidents requiring multiple jurisdictions to respond (such as the Pentagon on 9/11) would benefit from established working relationships fostered by the automatic aid system.

The next step in preparing first responders to accept symbiotic relationships with regional partners is to change the paradigm. First responders take an oath to defend the Constitution and local political boundaries should not impede that defense. This thesis focused on the automatic aid agreement in Northern Virginia, but the lesson is applicable across the country. No jurisdiction should be an isolationist and attempt to go it alone. There is strength in numbers, and the added capacity of a regional response increases resilience. Further study as to why some jurisdictions continue to ignore the benefits of automatic aid needs to be done. Communities must show the leadership demonstrated by the NVMR to collaborate with their regional partners and develop the level of trust

---

[136] Booher and Innes, *Planning with Complexity*, 3.

[137] Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail.* Perseus Books Group, 1997, Kindle Edition, 101.

experienced in Northern Virginia. This will strengthen emergency response capability in the United States.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A. INTERVIEW QUESTIONS AND ANSWERS

A. INTERVIEW PROCESS AND STUDY PARTICIPANTS

The following individuals were the participants in this study and provided insight into how the different agencies interact within the NVMR Agreement. The individuals selected were key leaders who have experience with automatic aid responses and were asked about their perceptions of the agreement. To objectively evaluate the NVMR Agreement, each of the three levels of command will include each jurisdiction's perspective. The categories for the interview will be:

Tactical—Leaders who have been responsible for direct supervision of units operating in a cross jurisdictional (automatic aid) response. This paradigm provides first-hand perspective of an interagency collaborative effort and achievement without the filter of upper management. Specifically, how the units interact with one another. Individuals selected will have the rank of Captain.

Operational—Leaders who have commanded incidents in a cross jurisdictional (automatic aid) response. This paradigm provides for a command level perspective regarding the use of units from different jurisdictions in terms of both collaborative interaction and a comparative view. Specifically, how units from different agencies perform both independently and as part of a team. Individuals selected will have the rank of Battalion Fire Chief.

Executive—Highest ranking department officer in charge of total management of the organization. This paradigm provides the organizational perspective of overall success of automatic aid but also the agency specific assessment of the program. Specifically, an objective analysis is made by individuals who are not influenced by daily interaction. Individuals selected will have the rank of Fire Chief.

    1.   James Schwartz, Fire Chief, Arlington County (Respondent AR1)

        Chief Schwartz was the incident commander at the Pentagon on 9/11 and became the Arlington Fire Chief in 2004. He is a graduate of the Naval

Postgraduate School and teaches at the Kennedy School of Government at Harvard University. He also serves on numerous boards and committees.

2.   Matthew Herbert, Battalion Fire Chief, Arlington County (Respondent AR 2)

Chief Herbert has been with Arlington since 1992 and holds a B.S. degree from Auburn University. His fire service career began in 1984 while at school and currently serves as an EMS Battalion Chief. Previous assignments include paramedic, company officer, department training officer, and emergency management.

3.   John Delaney, Captain, Arlington County (Respondent AR 3)

Captain Delaney is s 2008 graduate of the Naval Postgraduate School with a Masters in Homeland Security. He is assigned to the Clarendon Station that specializes in technical rescue and is a 17-year veteran of the Department.

4.   Adam Thiel, Fire Chief, Alexandria, Virginia (Respondent AL 1)

Chief Thiel has served in four states, (MD, NC, A, and VA) as a chief officer, incident commander, and company officer. He holds a Masters Degree in Public Administration from George Mason and is finishing his doctoral degree in public administration from Arizona State University. He also serves on numerous boards and committees.

5.   Michael Brown, Battalion Fire Chief, Alexandria Virginia (Respondent AL 2)

Chief Brown is assigned to Battalion 211 on A shift. He has over 35 years with the department.

6.   Byron Andrews, Captain, Alexandria Virginia (Respondent AL 3)

Captain Andrews began his career as a dispatcher in 1983. He has held numerous assignments as a Captain including Executive Officer and

Training Division. He also serves his community as the Chief of the Sterling Fire Department (volunteer) where he has been a member for over 30 years.

7.   W. Keith Brower Jr., Fire-Rescue Chief, Loudoun County Virginia (Respondent L 1)

Born and raised in Loudoun County, Virginia, W. Keith Brower was selected to lead the Loudoun County Department of Fire, Rescue and Emergency Management in November 2010.

8.   Kevin Stiles, Battalion Fire Chief, Loudoun County Virginia (Respondent L 2)

Chief Stiles is a 20-year veteran of the fire service with the last 13 being in Loudoun County. He is currently assigned to South Riding and has seven stations under his command. Chief Stiles has a Masters Degree and is also an Executive Fire Officer Program graduate from the National Fire Academy.

9.   Brandon Frieder, Lieutenant, Loudoun County Virginia (Respondent L 3)

Lieutenant Frieder is currently assigned to the Training Division and has 8 years with the department. Previous assignments include operational duties in Sterling Park along the Fairfax border. He has a Master Degree in Homeland Security.

B.   INTERVIEW TRANSCRIPTS AND TEXT CODING

The interview process involved a semi-structured interview designed to elicit the subject's response concerning their experiences within the NVMR Agreement. Participants were asked a series of demographic questions before the questions regarding the agreement. Additional informal questions were only used to collect information directly referred to in the formal questions. The transcripts that follow contain data from the formally scripted questions. Transcript texts were used to identify common themes in

the provided answers. The coded themes are: (a) Collaboration, (b) Equity, (c) Leadership, and (d) Trust.

Interview Transcripts	Text Coding
18. How long have you participated in Automatic Aid? With whom? L1: Roughly five years when we became an actual signatory. Same time as Fairfax City and MWAA, around 2008. We always had a mixed bag of agreements. We have participated in the COG agreement forever. The Automatic piece comes with separate agreements NOVA has had theirs for years with Arlington, Fairfax, and Alexandria that goes back to 1975. That agreement has morphed to embrace NOVA with the commonality of manuals and things like that. Loudoun had, out to the west, more like mutual aid. Keep in mind that Loudoun borders Maryland and West Virginia so we used to have the Tri-State agreement. So any fire in the northwest corner of the county fell under that agreement from 1983, we just re-did the agreement and it's going to be mutual aid, not automatic. They are struggling with services and it's not very reciprocal. We may dispatch them but we can't count on them so we'll dispatch additional Loudoun units. They are like an add-on. Prince William is much more like automatic aid. The more you come east, it's more like automatic aid. Even with Montgomery County Maryland, in the river. The history of us with Fairfax County is that we were an add-on company for years. Sterling began to put up duty crews and they set up their assignments to use	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

Sterling as an automatic unit in Herndon and Great Falls. That was the extent of it. Conversely, Arcola was having trouble getting out and Fairfax was consistently covering their area. Fairfax sent us a letter saying that we're not coming on an automatic basis. They will come on a mutual aid basis to augment but they didn't want to be covering it first due.

L2: We've done automatic aid for a long time. Through my entire career. Fairfax, West Virginia, Frederick County Maryland. We have different agreements with Virginia, West Virginia, and Maryland so it's all a little different.

L3:

- Mutual aid evolved to automatic aid. Not sure how it came to be. We work with everybody in northern Virginia.

AR1:

- The original agreement 1975 was Arlington, Alexandrian and Fairfax. It has grown, to include the airports, and to a lesser degree the military installations. Prince Williams and Loudoun are part of the NOVA agreement but they deal with Fairfax more than us

AR2: Ever since I can remember. Way back in 1984 when I was a volunteer in Fairfax. Here in Arlington, we work with Alexandria and Fairfax. There are areas of Arlington that the first due company is actually a Fairfax company, an area of Fairfax that since we provide the staffing to the city

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

of Falls Church but they own the station. It is first due to most of McLean, which is in Fairfax.
 	
AR3:
 	
    • Well, really, since I joined. It's always been something that's been around. We've never operated differently. It's how we do business.
 	
AL1: Since the inception but I don't know exactly when. It dates back to the mid 70s. It started with Alexandria, Arlington and Fairfax. But now Prince William, Loudoun.
 	
AL2:
 	
    • When I came to work here in 1978, the NOVA agreement was already into effect. It had come into effect in 1975 I think. But, it had been going on a couple of years when I got here.
 	
AL3: The original agreement was signed in 1976, I think. I was familiar with it before I came to work here. It has been here my entire career. Interact on a daily basis with Arlington, Fairfax and the airport.
	Collaboration
	-Regional and interoperability efforts
	-Manuals
	-Committees and interaction
	-Cooperation and sharing
	
	Equity
	-Reciprocal relationship
	-Balance & exchange
	-Giving vs. getting
	
	Leadership
	-Governance issues
	-Organizational structure
	-Written agreement
	
	Trust
	-Nature of relationships
	-Understanding & concern

19. Tell me how you came to participate in an automatic aid agreement.	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing
a. Was there a sense of urgency?	
b. What obstacles did you overcome?	
c. Were there any concessions?	
L1: N/A	
L2: No, when we started revising the documents from the 90's, they spent a lot of time rewriting them. We have auto aid with Fairfax, Fauquier, Clark County, now when you get to West Virginia, we give them Automatic aid but we only use them for mutual aid because there are some issues with their radio banding. Same thing with Frederick County, Maryland, we just started getting it from them.	**Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting
L3: I'm not sure. I think it was just getting available resources. It started as mutual aid and turned into automatic aid. The tower used to have to go all the way to South Riding. Now they aren't due at all.	**Leadership** -Governance issues -Organizational structure -Written agreement
AR1: • Bob Griffin was the emergency manager in Arlington and he wrote on the COG chiefs' relationships. He references the 1975 agreement and could have more level of details. They got together and said look, the boundaries are interchangeable, and one could drive between jurisdictions and never know it. There are also stations in one jurisdiction that are closer to addresses in	**Trust** -Nature of relationships -Understanding & concern

another jurisdiction. It would behoove all of us to belong to an agreement that recognizes exchange of resources. It would be better for the citizens and safer for responders. The Skyline building towers collapse in 1973. In that area, is a prime example where the three jurisdictions are equidistant to that address. At that time Fairfax, and not to be pejorative, Fairfax was very fledgling. Alexandria and Arlington were in line with the District as long established departments with lots of resources. It was in our best interest to work together.

AR2: They started talking about it in the 70s, they did mutual aid and they decided that it made sense to send the closest unit.

AR3: N/A

AL1: N/A

AL2:

- With the NOVA agreement, we participate with Fairfax County, Arlington County, the Airport Authority out of Reagan National. Not part of the NOVA agreement but limited automatic aid with Prince Georges County, Maryland with regard to the Beltway and Woodrow Wilson Bridge, and with Washington, DC for the fireboat because all of our waterfront belongs to the District. Once you're outside the dock, you

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

are in the District. • It began with the interstate highway system because people really don't know where they are. You were sending multiple jurisdictions on anything near the borders. It also became economics. Instead of every jurisdiction having to have an adequate number of everything, engine, ladders, whatever. You could get more by pooling resources. You could also take advantage of jurisdictions that had firehouses close to the borders. There are some unique things with Northern Virginia. Fall Church and Fairfax City are surrounded. Falls Church is owned by them but Arlington career firefighters staff it and run calls into Fairfax. AL3: Well, this is rumor, from my understanding, up in the triangle by Baileys. That corner up there someone was looking at building a firehouse in the traditional, cover your own, model. Some say it was the Skyline building collapse incident. This was the corner of all three jurisdictions. Someone said there has to be better way than for all of us to build fire stations here.	
20. Tell me how the agreement works. L1: N/A L2: Reciprocal agreements. The closest unit regardless of jurisdictional boundary will be	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing

dispatched. So, if the Loudoun engine is closest to a Fairfax box, the Loudoun engine will be first due. The only thing different with Fairfax is their units have GPS locators and they are dispatched by those. Same thing with Prince William. Having the radio makes it easy, you just go to their zone. Before you had to have a different radio for each jurisdiction. Now every state and county is on our portable.

L3:

- Fire and EMS response with Frederick (MD) is more mutual aid and EMS. NOVA-EMS & fire, Washington County, Jefferson County, Clark County (Mutual aid)

AR1:

- The old NOVA agreement had restrictions and limitations on what you gave. In fact, up to 1999, we did not run public service calls under the agreement. It didn't mean a jurisdiction couldn't give aid but you couldn't rely on it. When I came here, it was part of the routine. In 1999, Glen Gaines (Fairfax Chief) was retiring and he gave his observations and recommendations. He said I want you to think really hard to eliminate the barriers to everything, don't think about holding back resources for the event that hasn't yet happened. And figure out how you can support each other in a more systematic

Equity	
-Reciprocal relationship	
-Balance & exchange	
-Giving vs. getting	
Leadership	
-Governance issues	
-Organizational structure	
-Written agreement	
Trust	
-Nature of relationships	
-Understanding & concern	

way. If Fairfax gives Arlington a lot of resources, then move Alexandria resources over and cover with the remaining resources. He pushed the idea of taking the agreement to the next level. Don't hold back because a jurisdiction asking for help has a known emergency and need help. So that got us thinking and we almost immediately dropped the service call, the two ladder truck limit, shortly after that, Fairfax wanted to create manuals for all their SOPs with training incorporated. This is an interesting juncture. Up to now you operated under the SOP of the jurisdiction you were operating in. So, you had to think about where you were. I immediately recognized that this was going to have a big impact on us. One of their first manuals was a Hi-rise SOP that called for automatic third alarm response when smoke is seen. That created a lot of conversation but it went in a positive idea. We decided to do the manuals regionally and those will eliminate the problem of multiple SOPs. It is an agreement that calls for the sharing of resources but it also says that you agree to operate by the guidelines and participate in their development. We have writing committees, operations board, senior ops. Shortly after we agreed to do that, we began to exchange command

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

officers too. If the first arriving chief is from a different jurisdiction, so what. Everyday my chiefs run into Fairfax or Alexandria and become the IC. It is an interdependent system.

AR2: You get the closest resources based on the address of the call without regard for the name on the door. I say that, we have a large NOVA agreement and committees that decide how we operate and have manuals. So, sometimes those assignments are up to debate. Things like heavy rescue. We had calls right on the border where our rescue was 1.9 miles from the call and theirs was 6 miles from the call but they would be on the call. Those are the things that get frustrating to the guys on the floor because they want to go. It's even worse when the engine is second due and your rescue isn't due. That is one of those inequities. The Fire Chief hears about this at every fireside chat. It always comes up that they aren't using us the way they should. There used to be a delay in dispatch before we had CAD to CAD but now we can see each other's units.

We have Fort Meyer right in the middle of our jurisdiction, they run out with us. We train together, they attend our multi-company drills, and CME so they can work seemless with us. But it's worked out pretty well because we a had to drop an engine in the Clarendon area. The engine from the Fort runs it. Because they ran so many EMS calls they

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

were pretty good at it. They are a really good partner.

AR3: It's as simple as if Arlington, Alexandria, Fairfax were one big department. The ways it's supposed to work is that, the closest fire engines and truck respond based on their proximity to the incident.

There are some quirks. There is a delay that Fairfax has been dealing with and it goes both ways. This is an example of stuff that goes on. At one time Fairfax built in a delay and included it in the algorithm so if another Fairfax unit would arrive in that time, they would dispatch their own rather than using automatic aid. In 99% of the time, an engine is an engine, a truck is a truck, we don't have ambulances but there are a few quirks but it doesn't cause animosity. It's just part of doing business.

AL1: We have an automatic aid agreement that is just a handshake agreement. Some of it operates more like mutual aid and some of it operates like automatic aid. With Alexandria, Arlington and Fairfax, it operates like automatic aid 95% of the time. Towards the outer edges of Fairfax, it really functions like a mutual aid system. Fairfax has to, and so do we have to call and until recently, we have CAD to CAD sort of except Fairfax and Arlington dispatch by AVL, but we don't so our units are dispatched statically from their stations. It's far from perfect. Over time, other partners got involved but for us it's the airport, Fairfax and

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Arlington in fact Arlington Engine 107, more than 60% of its calls are in Alexandria. So that's not supposed to have gotten like that because the fundamental tenets of the system is that you take care of your own territory and then the ratio of given to receive is supposed to be one to one but now we receive two for every one we give. Nobody ever knew that because nobody was supposed to count. But with budgets the way they are, we wanted to know, so we counted. Now we are building a station to make up that difference. We also go into Prince Georges on the Woodrow Wilson Bridge. Sometimes we'll see the District there. Prince Georges is give only. But the part you think of as automatic aid is Arlington Fairfax, Fairfax city and the airports.

The agreement works. If we didn't have it, we run out of medic units every day. I tell people all the time that if we have a call here right now, I don't even have to look. You're going to see a green medic unit coming down the road from the airport. I just know this. We have to have it. It works. It works really well considering the complex environment we are in. But making it achieve the promises everyone talks about, like seamless service, I don't know of any system that works like that.

AL2:

- The way the agreement works is that

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

regardless of border, the closest resource is dispatched. Or, it could be multiple resources. A box alarm here in the city is going to be mixed. You have to operate under the same SOPs which we do, there is a website that anyone can access that has the SOPs. We all follow the same ones. At the command level, officers go to training twice a year, we all know each other. In Alexandria, there are sections of the city that are served by Arlington units. There are areas in Arlington where our station is closest. In NOVA, all the CAD have up to 20th due

AL3:   The way it works, and maybe we can talk about the 30,000-foot level and then the 1,000. Globally, there are no political boundaries that exist between jurisdictions. The closest units will be dispatched to incidents. The CAD thing has created some delays in the processing of calls. It has been improved but is still being worked on. Regardless of the boundary, the closest apparatus will be dispatched. So that corner I was talking about, up by Baileys Crossroads, you get apparatus form all three jurisdictions. It's a mix of engines, command officers, rescues… The NOVA manuals attempt to bring together operational consistency. It puts everyone on the same wavelength.

Trust
-Nature of relationships
-Understanding & concern

21. What do you put into the agreement?	**Collaboration**
L1: N/A	-Regional and
L2: The use of resources without giving each other a bill. The manuals spell out what to do	interoperability efforts -Manuals
L3: Fire and EMS response units.	-Committees and interaction
AR1:N/A	-Cooperation and sharing
AR2: These committees and manuals. The manuals are written and approved by a team. Everybody is on the same page. That can be a sticking point because we take them literally if it says to do something, you do it. When you run mutual aid, sometimes assignments don't get picked up. When a mutual aid company runs in and doesn't do what they are supposed to, the chief will say something. We do see some issues where people do what they want or they always make us RIT. Some of that is anecdotal and some is truthful but maybe it's exaggerated.	**Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting
We pay overtime for the committees.	**Leadership** -Governance issues -Organizational structure -Written agreement
AR3: N/A	
AL1: N/A	
AL2:	
- There are NOVA SOP's on flammable spills, mass casualty, tech rescue, RIT, any of those things. We have a state team, Fairfax has a team. We partner with tech rescue, due to our size, with Arlington. Those guys drill together monthly, if we have a decent hazmat call, somebody will start Arlington's team	**Trust** -Nature of relationships -Understanding & concern

AL3: The manual process is big but a lot of it is the dispatch and liability issue. The chiefs meet a lot to address issues and put together position statements for the CAOs. This makes their voice stronger than they would be alone.	
22. What benefits do you enjoy from the agreement? L1: None of this works without the personal relationships you build through the chiefs working together. The COG structure has been a great conduit to bring folks together. We could spend all our time going to COG meetings. But it works because of the relationships. Our chiefs know the chiefs in Fairfax. Turnover can change that but Fairfax has had the same chiefs in Battalion 1 for years. We don't train together as much as we should but I'd love to get a Fairfax engine up here with a Loudoun engine and do evolutions together. We don't have that, yet. At the end of the day its how many potatoes can you squeeze in a sack. Right now our training center is busy. We are running a recruit school, Firefighter One and Two, EMT, Specialty classes, CPR and things like that. L2: Closest resources L3: • Loudoun gets medic units, heavy rescue-tech rescue comes from Fairfax (rope rescue, lengthy rescue), and the airport	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

helps on the toll road. Route 7 up to the mall gets Fairfax on the box, Sterling Park gets help as well, and South Riding gets help. Any east end assignment is getting at least one Automatic Aid unit	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing

AR1:

- There is a social aspect. I think it's about trust. It comes from the human interaction and building a system to support that. People know what is expected of them. We do command training where we work together.

- CAD to CAD. We can now take a call that the computer identifies that a request for resources will be made. We went from two minute processing time to two seconds. It was a massive achievement. It took a lot of work not just financially but governance. Policies and framework were developed. The challenges to technology are not the bits and bytes, its the governance and getting people to agree to do something differently. CAD TO CAD is necessary to achieve situational awareness in the NCR.

AR2: We end up using our partners for medic units. We only have seven and run out. We can't use you (DC) so all we have to pull from is Alexandria and Fairfax. So when we pull too hard on Fairfax, they will turn off aid and in the street, they say oh you will come for a fire but not this other crap were

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

running. I can see where they are coming from because they are out of resources too and they say we have to just make do. Its crazy for them to send us a unit from Chantilly all the way down here. We had a person get hit by the train and had to get him out from under it. It became a mass casualty because all the people were on the platform were falling out. A mass casualty incident brings the world. We can't run that by ourselves. We get those resources from our partners.

AR3: The manuals simplify things. You don't have to learn different tactics or SOGs. They were developed by everyone.

9/11 was an evidence of it. I think it's the right way to do business. If we had an area where we didn't allow aid to come in, we'd have longer response times and not be able to address the heart attack in timely a manner. It's the right way to do business, the mature way to do business and I'm surprised that more folks don't do it. It doesn't make sense to me.

You have to build relationships well in advance of the big one. You just have to read the paper. The big one will come back to DC.

AL1: If we do nothing more than get a bunch of units from different jurisdictions, faster, then there is value in that. That's maybe only 25% of the way there because then they have to operate together which is 25% and then backfill is 25% to account

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and

for the fact that you have this stuff. It doesn't have to work perfectly to add value. There are some inherent efficiencies to operating like that. We don't have a station that's jammed right up to the border of Arlington County. We have better station distribution in Northern Virginia. We operate at 50-75% of what you'd call perfect. I don't think its an option for the future, we don't just look at this from an operations standpoint but also from logistics, special operations and things like that. These things can be regionalized pretty easily. Why wouldn't we put those folks together? Same with the river, we operate with DC on the river. We are getting a new boat but its not gonna be staffed. Why does it matter what uniform they wear? But that would be a challenge because the little things like culture matter. It means a lot to our people, culturally, and it flies in the face of regionalism, that we put together that designed and built our hi-rise pack. It's a sense of pride for our people but it's not what we should be doing for regionalism, we should just use what Fairfax has because you know, we get into these issues. It shouldn't be such a big deal but these little things matter.

With logistics, why wouldn't we do a regional effort? But you have to staff these efforts or it will not work. You can't hope an organization works without anyone paying attention to it. That is what we have been working on, to build the staff to work

interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

on regional activities. I can't detail people; I don't have anyone to send. That's a fallacy of regionalism that you'd save by creating a new structure.

Some have suggested that we develop a northern Virginia regional fire department. But, for any of these to work, look at airline mergers, successful and unsuccessful. The sooner they get the panes painted and uniforms switched, the better it works. So to do this, you have to resource them properly. So if we want regionalism to work, we have to staff it. Our CAD to Cad system is technically a pilot project because there are some legalities that have to be worked out. Who is going to maintain it? Who is going to pay them? That is why a regional entity if created, could do the regional work. We have to make it work better in Northern Virginia before we can expand it.

We tend to look at things simplistically in the fire and emergency services, yes or no, burning or not, but its not that simple. We are talking about a very complex, networked group of jurisdictions and organizations with different legal authorities and structures and that policy piece makes a big difference. I would argue, that for efficiency, we shouldn't dispatch fire and EMS units from Alexandria at all. Arlington or Fairfax should do it. It's an easy efficiency, but for political reasons, it

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

was decided not to be done. But, if you really want efficiency, then, that is what we should do. AL2: N/A AL3: Well, the city is a small city and we can't have an abundance of resources. This gives the city the ability to increase its surge capacity for large calls. The agreement began as fire only and excluded EMS but now it is both. The mutual aid sends the closest resource which is usually a Fairfax unit coming in to help us. It is not uncommon to get our EMS assets going into Fairfax County.	
23. Do you think there is a balance between what you put into the agreement and what you get out of it? L1: I know what Fairfax felt like 25 years ago with the Route 50 situations. They kept sending resources and we couldn't. That is what happening to us on the west end. I've had top temper our people (administrators, budget people) at times and remind them that we are trying to be a good neighbor and gain some perspective. Fairfax has been bailing us out for 100 years and so it's kind of the good neighbor policy. As long as the public is being served. Our staffing has improved to allow us coverage. L2: Yes and no. We lean on Fairfax a lot. They	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting

send their ambulances and they don't get as much from us. Now we supply a lot more to Clark County, Fauquier and West Virginia than we get from them. The argument has been that we should stop giving aid to West Virginia but if we did that, Fairfax could do that to us. We are no better than anybody else. So looking at it holistically, we need to give automatic aid.

L3:

- I think suppression wise, I would say yes. I think they run a few more calls into Sterling. Fairfax gives us more than they get. Fairfax got frustrated with call volume and quality in Sterling (volunteer issues). They started sending an EMS supervisor too with the unit.

AR1:

- We get asked that question at budget time by the county board. Because they have the responsibility to ask the question, not that they would ever change it, but they need to be apprised of what that balance of exchange is. We don't worry about it because if you look at it across the system its in balance. I may give to Fairfax more than I get but I get more from Alexandria than I give. If you look at the totality, there

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

is a balance there. At the end of the day, who is going to benefit from saying, well you ran 20% more aid into Fairfax. Well that is how the incidents fell. It was where the resources were, it had something to do with where demand was, ebb and flow. Nobody really cares about the balance. It comes up at budget time, what are you getting from Fairfax, Alexandria.

AR2: Absolutely, absolutely, You know I worked in a system at Auburn were we got dispatched to the city line and you could see the house, right on the city line fully involved but we couldn't go. It was a volunteer system and they had to blow the sirens and get people to come. To me it was inconscionable because I was raised in a system that it was a fire and do it. I can imagine a citizen looking at that and saying what the hell.

AR3: I don't think we have any issues like that. At least not with me. Its pretty much ingrained. I've been doing this 16 years and they have been doing this before I got here. We have a station that runs more calls into Alexandria, that's a unique situation and there's not any animosity. The guys just want to run calls.

The individual relationships are important. Our medic unit in Falls Church is in Fairfax a good bit and their Bailey's Crossroads unit is in south Arlington all the time. In fact they had t-shirts made up. That station is unique. Because they run a

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

majority of their calls in Arlington or Alexandria. We have a station that is first due to a lot of Alexandria. We used to jokingly call it engine 209 (Alexandria numbers).

AL1:   I did the analysis and reported it (unequal ratio for aid). So, I initially looked at what the impact of Arlington's reduction would have for us…That is why we are building a station there.

AL2:

- I think it kind of ebbs and flows. It depends on what is going on in the jurisdictions. Right now on the west end our growth is there. As the population centers change, we broke ground on a new station. This is in addition, not a replacement. Right now, we are probably receiving on the west end more than we are providing. But when you change that around, we are probably providing more somewhere else. But once that station is in place, it will change. The Eisenhower station is a stone's throw from Fairfax and that will change the dynamic. You know, Arlington's 107 probably runs more in Alexandria because of where they are. They are literally on the border.

- Q- does it raise tension? Its nothing ever been exposed to. If you talk to the folks in the field, they will tell you to give us more. People walk around with portables listening to the other jurisdictions. Our station 209

Trust
-Nature of relationships
-Understanding & concern

has Arlington piped through the house. People want to run the calls, fires and stuff you do work on. We don't go to a ton of fires so if you can pop a fire in Arlington, that's good AL3: <mark>I think we get more than we give</mark>. <mark>People kind of accept it as that is the way the system works</mark>. <mark>The benefit is that it increases the amount of resources available to you.</mark> If we get a multiple alarm fire, all our resources are gone.	
24. Are there any members of the agreement that do not feel the agreement is equitable? If so, who? L1: I can't remember the last time we had an issue. Maybe their budget office. L2: Those that do probably haven't analyzed it like this. Holistically, <mark>it works out because it's an average</mark>. Most guys are just waiting for a call to go on. L3: • Fairfax. But there are a lot of good parts too. AR1: I'll answer on two levels. <mark>Fairfax because they are the big gorilla, have lots of resources, they are rightly concerned about being the resource pool</mark>. If I was going to close a station that runs 20% into Fairfax, well then that increases the load for them.	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement

If I was going to get rid of my hazmat team (I'm not) but if I did and wanted to rely on them, it's a concern. They don't want to be the provider for the region for everything. And we take measures to prevent that. We have plans to build a station in west end Columbia Pike corridor. The reason is that the demand is pretty high there. Demand is also high in Baileys (Fairfax) I have to think about the idea that Fairfax could say their own demand is high. We take efforts to make sure we do our share and not have any member unfairly shoulder the responsibility. We'd like to get to regional planning in terms of policy level of resource allocation. Culturally how do organizations accept the automatic aid agreement? This goes to the portion of experience. You could be in Fairfax County and never run an automatic aid call. Your understanding of the relationship is probably different from the guys at 410 who come eat dinner at an Arlington Fire station a couple time a month. When Dave Rohr and I worked together as company officers, we lived the agreement everyday. It shaped our view of the agreement. So, you could get people from Fairfax that haven't experienced it and say why do we have to collaborate? They should do what we say and take it or leave it. So culturally, people see it a little differently. Some in my jurisdiction think Fairfax does get their way; I don't think its true. But as the executive, I do make decisions based on how it will impact the

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

agreement.

AR2: I'm not sure; I think everybody knows that there will be some inequities. You look at Ft. Meyer. We knew they didn't have an ambulance, we run all their EMS. We beat the crap out of the airport medic unit. We did that before we let their fire trucks come off. In the last 6 months we started letting the engine come but the medic runs 5 or 6 a day for us. They have the furthest to go to the hospital. Everybody knew there would be some inequity. The boundaries really don't matter to the guys. They just get mad when they can help and aren't allowed. That where the frustration is. It's more like if were gonna do this, lets do it all the way.

You hear that with the medic units. It's hard to transfer for them because they are so fluid. We have a surge company where we can put a rescue squad out of service to put a medic unit in.

AR3: Equitable is not the right word. We've run into some issue with the folks at Ft. Meyer. They are a small base with very few incidents and we are always supporting that area but when they come off there is a question of the skill level.

AL1: I'm not sure if the taxpayers are aware in Arlington or Fairfax just how much they have been subsidizing fire protection in Alexandria. It has now become a major issue and since I've been here five years ago, we are trying to build stations and do our part. It is not sustainable for our system to

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

maintain it, we have to get back to near a one to one ratio. It began by the DOD putting a facility at Fort Belvoir Annex. We talked about co-staffing at station with their people and our people but the respective labor organizations didn't like that. I think we should serve our city with our people.

AL2: Maybe, it's all on perspective. I think the most part of not, maybe from the political perspective. Described "guarding" of area. If engine fill in the blank hears another companies from Fairfax running the box, they will try to add on to the call. I think that's anywhere. At the upper levels and busy stations at night, and you hear an EMS call or wires down or service call, we're glad for mutual aid

AL3: The mentality of the chiefs in the area doesn't look at it as I get more. However, some chiefs use it as they talk to their CEOs to try to get additional resources. Even though we get more, there is an impact to the neighboring jurisdiction. As calls come in, the resources of the region shift. It affects the outer jurisdictions more than the core but we have run out of resources.

There is a big brother attitude from Fairfax because they are the biggest on the block and have all the resources. For example, they just instituted a new radio procedure on how to talk on the radio. So now everyone is expected to do it.

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

25. Who are the main supporters of the agreement?	**Collaboration**
L1: The COG CAO group. There is no resistance. They know the benefits and as the leadership has changed over the last few years, the historical perspective is there. When Air Florida hit the bridge, everybody responded and everybody thought they were in charge. I was working that day and I brought a boat from south Fairfax. We got there and it was good that there were no substantial rescues after the first few. Everybody thought they were in charge; nobody could talk to each other. Contrast that with the Pentagon. So, from 82 to 2001, what happened is that we embraced NOVA training, and did a lot more talking and training together. There was more emphasis, even at the COG level, to break down jurisdictional barriers. The Pentagon response was a direct benefit from that. We all had 800mhz radios, we click over to Zone One, got an assignment and went to work. That was huge, it has gotten better.	-Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement
L2: Senior staff, and the battalion chiefs. They are the ones that make it work. We had an issue with West Virginia due to a communication issue. We have reinstituted it and we are working through the issue.	**Trust** -Nature of relationships -Understanding & concern
L3: • I think there are several. Board of Supervisors, fire chiefs, operational officers,	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing

it really helps everybody. They see it as more resources. It has been accepted at the company level. The older guys got used to it and the young guys have never seen the dept without it. It is all they have ever known.

AR1: CAO, Board of Supervisors. Conceptually, it's really hard to argue against it.

AR2: I think the public has no idea. The lady behind our station thought we were volunteers. A lot of the support is from the feet on the ground. The crews have dinner, drills, and do building walk throughs together. There is a really good working relationship and it doesn't matter what it says on the turnout coat.

AR3: All those jurisdictions I mentioned before. I'm telling you that it's so ingrained that it's a non issue. Everybody support it. It's a way of life. When I work a boundary station, I expect to go into Alexandria and Fairfax everyday. And I expect Alexandria and Fairfax to come into our jurisdiction also. Under your old chief, we used to go into DC a lot but that has gone away. I'm surprised by that.

The firefighters know how the system is supposed to work. The city council and citizens don't know. It's surprising that in this day and age, it's not more

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

of a combined effort and so territorial. We have to look at the greater good because when the big one happens in DC, it's going to be a cluster. Now is the time to prepare for the big one. You're going to need help and we want to help but some might say forget you, what have you done for us?

AL1: N/A

AL2: I think if you know the history. The answer would be anybody on the organization. Before the agreement, there was no standard for minimum staffing. These departments evolve from volunteer stations to big departments. The old-timers would talk about staffing ladder trucks with two people. Minimum staffing was part of the agreement. You agreed that when you sent a truck, it would have three people. It wasn't that long ago when small departments in the state had staffing of two on the engine, one on the truck. Now everyone is doing three or up to four. We work hard to get to four. Fairfax has four on engines, Arlington has four on everything but that is a growth out of the agreement. It became political, if we go below the staffing level, it does give that advantage. Salaries too, we compare to our mutual aid partners. You'll hear that we should take care of our own but that is a selfish point of view. The reality is, politically, it gives you more resources and more to compare to, of course it is a working relationship. The managers, everything here is manager form of government, they are huge supporters.

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

AL3: There is no one against it. We get mad when they play games by shuffling the dispatch to make us the RIT team.	
26. How have they supported the agreement? L1: N/A L2: Working through the issues. L3: • I think everybody supports it, especial from above. NOVA manuals, command officer training. Every once in a while MCI drills, not at the company level. The NIST hi-rise study, monthly or quarterly command officer training. AR1: They are knowledgeable and behind the agreement. They see good strong relationships. Who would want the alternative? That when you need help you can't work together effectively. AR2: N/A AR3: N/A AL1: Glenn Gaines, the former fire chief of Fairfax, he said in the early days of these manuals was that the most important call is the next one. You keep resourcing the next one, and the next one and the next one. I think we need to be proactive and be able to anticipate. We need to know where those resources are coming from. We had challenges during the flash floods. During Sandy, Montgomery County called us and offered some	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

boat resources because we were supposed to get hit more than him but that happens because of the relationships. If we do a better job at being proactive, it can address the concerns of those antagonists. AL2: N/A AL3: N/A	
27. Tell me about the challenges of the agreement. L1: The legal stuff. I'll never understand that stuff. One question is immunity. Some jurisdictions have big issues with that and use it as an excuse for not doing anything else. That was the biggest challenge I remember. L2: Loudoun County is the only county that doesn't do EMS billing. So, if a Fairfax unit runs a call in Loudoun, they send them a bill. I few send ours to them, it's free. Prince William wanted to change how they did RIT. They had a line of duty death and had to use third due as RIT, that is what worked for them. So there are some differences. Rural water supply is different. We can put three tankers on the street, they can't. There are little differences but it all works out. L3: • Challenges would go through the chain of command to address. Running undispatched was addressed in this way. You would see it	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships

more in PG, Montgomery. But we play by the same rules. Challenges are cultural, if that makes sense. Fairfax doesn't understand the career/volunteer difference from Loudoun. The career Firefighters get more respect than the volunteers. The processes of the system have eliminated most of the issues	-Understanding & concern
AR1: All of my stations except one, run automatic calls everyday to one degree or another. Even Roslyn is running up the GW Parkway. Everybody does it and mixes it up everyday. So does Alexandria because of its size. If you look at Fairfax, it's a relatively small percentage of the department that runs a call with an outside department. If you look at the border companies, they do it. There are parts of Arlington that are served by units from other jurisdictions and we don't supervise that. We don't watch what they are doing. There is trust. If a complaint comes in, we deal with that at the senior chief level. But no one has ever said we don't want them coming in here.	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting
There have been some times when the Fairfax Communications Officer, during thunderstorms, will stop automatic aid. But, that is immediately fixed by a few phone calls. How do you meet your demand during high volume? If you don't have that experience, they will tend to suspend it. My guys are like "what do you mean were stopping it." Are you meeting your own obligations or using us to do	**Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships

it without making an investment.

AR2: Recently, Fairfax changed the way they talk on the radio and never told anyone. They went from how we historically did it in this region of "me to you" to "hey you it's me" like the National Fire Academy. I get it but they decided to do that and not tell anyone so we are running calls and our chiefs are in command but didn't know the change. We had an incident where the Battalion Chief ran a working fire and no one was talking. Can't get anybody on the tac channel or the talk around. They never told us they were using a different talk around channel. I think that because they are so large, they make changes, and it doesn't trickle down to let our partners know. I know the chiefs talk about that, and Alexandria wasn't happy. But we are told to do what we are trained to do.

Prince William had to change things to make third due the RIT, they had a line of duty death. That doesn't work for us. But they are like a second tier in the agreement. Not everyone has EMS supervisors. And when the manual says the supervisor will do X, they don't have a supervisor or they are providing ALS service. Somehow it just works.

AR3: There are some issues. When I first came on, there were different operating procedures. So a fire in Alexandria was tactically, they had different tactics to put it out. But, that changed when they

-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships

went to the NOVA manuals.

Fairfax wouldn't recognize our truck as an extrication unit so they would send their rescue right past our firehouse. Some of the officers, if it really irks them will add themselves to the call.

Although the mutual aid aspect hasn't changed, mutual cooperation has diminished due to the economy. We do not have the funds and personnel to address larger issue and so we refocus on providing the basic services before we can plan for a pandemic or rescue task force, active shooter, and supplemental missions. I don't think there is the leadership or the funding for it. There is more of a self-centered kind of attitude.

AL1: There has been this idea, historically, that we can turn it off. When we had the earthquake and ice storm, we got calls from Fairfax communications saying we're not doing automatic aid anymore. So the Chief from Arlington and I called our counterpart in Fairfax and said "Hey I don't think we do that," because on our worst day is when we need the system to really work. But in the dispatch center, they see their resources disappearing and think they have to protect their own. So the challenge to managing the system is that no one has situational awareness of the overall system but no one is looking at it on a map. No one is watching that. So we are working on a resource package to address that. There is talk about a CAD to Cad

-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships

interface to tie those CAD systems together. The infrastructure is in place and there is a data exchange hub so it's technically possible. But the deal with automatic aid is that it's less a out technology and it's more about the human factors and the relationships. It's about what happens when everybody gets there. We have operating manuals that started 10 or 15 years ago. The regional operating manuals were supposed to be the playbook that everybody operates from, to extend the football metaphor. The problem is that not everybody uses it. You cannot just tell someone to do it and expect them to do it. Over time, there has been an erosion of compliance. At the upper levels, there is a belief and talk that we can do it but at the bottom of the organizations, they feel that we are all different and shouldn't operate together this way.

The belief that everybody would follow these and operate the same was a fallacy from the beginning. Not everyone is staffed the same and on a high rise assignment, the manuals assign tasks based on a four person ladder. The problem is we have a three person ladder and the thought for a long time was, well, just do the same with three but that isn't possible. It's an acknowledgement of this when we revised the agreement to create the tiered levels of who can do what. And we found out that everyone has a different hi rise pack, one jurisdiction decided

-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships

to change their radio protocol without telling anyone. It becomes an operational issue really quickly. So we are wrestling with a lot of the implementation. The computer can dispatch them all the same but what really matters is what happens when they get there. Do they operate according to common operating procedures and standards? Do they have equipment interoperability on the things that really matter? I would argue that a hi-rise pack, that you are supposed to be able to use in no visibility conditions, is one of the things that need to be the same. But again, we did a lot of research and changed to two inch hose and implement the newest technology. But it's easier for us to do it with 12 companies than Fairfax with 57. That's a lot of money to buy it. We thought we were the rouge jurisdiction but when we looked at it, everybody had a different hi-rise pack. So that's the big deal. It's a lot more than having an agreement in place. It takes allot of ongoing relationship management, care and feeding, and it has to get down to the ranks too. Because it's one thing for the fire chief to say, this is what we should do If they aren't doing it, it won't work. I've described our system as a house of cards. And it's been a house of cards when you have parts of and entire jurisdictions that aren't covered. If you have people not doing what they are supposed to be doing, if you're honest about it, that's a problem too. Many of these people are adapting the	-Understanding & concern **Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships

conditions on the ground. One of the things we are looking at is the balance between interoperability and flexibility. We are realizing that one size fits all does not fit anybody. So are we going to all do it the same or are we all going to do whatever we want. We are trying to find the middle of that.

It really can work but it's because of the relationships and human factors and not the tech. The real attention needs to be around the governance, organizational structure, and resources. We have regional staff to do the regional work. This way they aren't with any one jurisdiction.

We have A players that can figure this out and we should give them the latitude to do so. But to get into organizational behavior. The idea that we can give a bunch binders to someone and that's going to work is patently ridiculous but that's how we try to run fire and EMS organizations. If we want and we need flexibility then we better start training and organizing for flexibility. So, this quickly gets into many other facets that people don't recognize.

AL2: I heard about the Fairfax union having an issue citing safety but they were just trying to get more resources. I could be wrong. We are dealing with very similar departments, Fairfax interfaces with Loudoun and Prince William and they are very different, and I'm not criticizing because I came up through the volunteer system but the volunteers is just a different dynamic. Every now and then, you

-Understanding & concern

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships

get a question about command officers. Fairfax deals with that. But here in Alexandria, no not really, we work at any issues and not play politics. The advantages outweigh, it's about talking to each other and working through the issues. Changes get people in an uproar. Years ago when Arlington bought Quints and did away with them, those changes reverberate throughout the system. We all make our own decisions but it impacts our partners. Four-inch supply line was an issue, but they took the first step and we all kept up. The agreement helps us all keep up with one another. Our standpipe rack has caused concern, it starts conversations. Sometimes when you closely link with automatic aid, it's the little things that get people upset.

AL3: The manuals can be a challenge. Those making them sometimes are in their own world. Every now and then, the manuals need to be adjusted. It's a bureaucratic process to get hem approved from working groups, to review process, to operations chiefs, to fire chiefs. Since the original signatory, places like Prince William, who had issues with a line of duty death, want to change it. They tried to get it through but everyone liked the way we had always done it. So now, you have an exception in Prince William as to who is the RIT engine. This has led to other jurisdictions wanting exceptions too. This is mainly in the Tier Two

-Understanding & concern

groups, rather than the original three.	
28. Tell me about any antagonists. 29. Tell me about their objections. L1: No L2: <mark>Perceptions of jurisdictions</mark>. They are a bunch of clowns and don't know what they are doing… it's different than what they are used to. L3: • None that I know of. AR1: Nobody in the unions that I know of. When you go back to safety, everyone supports it. The labor unions are not in any way opposed. There are a few people here and there that don't like it because they are not invested in it and don't want to do the hard work to keep it up. Or they think they can do everything themselves. But if I go beyond two alarms, I need help. <mark>I want to know where the help is coming from before I need it</mark>. AR2: Only when units aren't dispatched to areas that they are closest too. They get frustrated when they can't run everything and they say lets pull back to the borders but they don't see the bigger picture because we cant go it alone. <mark>Those guys keep us honest because they want the system to work the way it is supposed to</mark>. It's hard to sit in the station and not be due when something is going on. They do a lot to support the agreement through training and the CAOs and administrators provide	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

funding to do what we need to do. Even through bad budgets. There is understanding from the board that the rig that shows up may not say Arlington County on it. AR3: N/A AL1: There are down in the organization. We have people in our jurisdiction that say, hey, we don't want to be Fairfax. And I say good, neither do I. There was a lot of, well we have a different built environment. And I think there are some things we should do different. There isn't a jurisdiction in the region that can stand alone on a really bad day. That includes DC, Fairfax everybody. AL2: I don't think so, it's universally accepted. It expands your horizons because of our interaction; the opportunity to do more exists. Hazmat with Arlington, when Katrina hit, NOVA departments sent a task force for two weeks in Hancock County, Mississippi, four engines, command staff, I spent 26 days in Mississippi, that I never would have done if not part of the agreement. Even on 9-11 we wouldn't have done the things we did if not for the agreement. We don't have a USAR team. AL3: N/A	
30. **Tell me about associated costs from the agreement**.	**Collaboration** -Regional and interoperability efforts -Manuals

L1: N/A	-Committees and interaction
L2: If there was a cost recover from hazmat, we might get some of that. But it's reciprocal for tech rescue, hazmat whatever, no bill.	-Cooperation and sharing
L3:	
• None that I know of, it all comes out in the wash	**Equity**
AR1: The agreement says there is no cost to the but there is one exception. It comes from a lesson out of 911. When FEMA came in after 911, they have to apply the local policies and regulations. You can't change the policy because the Feds are in town. When we provided the background documentation, they seized on the fact that the agreement says we don't pay for exchange of services. So FEMA said they will pay Arlington but not DC, Alexandria etc. so we went back to change the agreement to say that we don't pay for exchange of services day to day but when there is a Stafford Act declaration, we do. That way we can make everyone whole.	-Reciprocal relationship -Balance & exchange -Giving vs. getting
	Leadership -Governance issues -Organizational structure -Written agreement
AR2: Ambulance billing is the only thing. We direct bill.	**Trust** -Nature of relationships -Understanding & concern
AR3: N/A	
AL1: When I was in Phoenix, they would dispatch all the calls in the region. They did it for free. But when it was discovered that 51% of the calls were outside the city, it was decided that they would charge. People wigged out. But when we got a $7,000 bill, I said, do you know how much it would	

cost us to do this ourselves? Write the check. So these are public policy questions. Especially here with the two states and the district.	
AL2: I don't but in know over the years, it was the cost of radio interoperability. I don't know if that was earth shattering or paying license fees or how much it cost. Money spent on the CAD but not much on daily ops. We spend money on training and committees for SOPs. If things didn't work, if people didn't have respect for how things operate, it wouldn't work. You have to get where people know each other and trust each other. No mutual aid by surprise, know what you will get and operate under the same rules. It's not unusual to be in charge of a fire in another jurisdiction. Around any firehouse table, you get competitive issues	
AL3: N/A	
31. If you could change one thing about the agreement what would it be?	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing
L1: I don't know what I'd change about the agreement. I'd require more training, hand-on. I think that builds relationships that you need to interact better. I can say Ray, lets figure this out.	
L2: I can't think of anything specifically but I'd like to have one agreement for all our partners. Make it more consistent.	
L3:	**Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting
• This is really nit picky but it drives me	

crazy that they dispatch a unit that is unavailable. They have to change the whole assignment when one is unavailable. Our CAD system is terrible. We completely lost CAD and radios at a house fire. We grew very quickly but in some ways, we haven't grown at all. The Fairfax guys would love coming to Loudoun b/c our rules were different. Fairfax would not let us go in on a lot of fires. We were pretty aggressive especially for a dept no one knows about.

AR1: N/A

AR2: Making sure everyone plays by the same rules and having one common dispatch center.

AR3: I don't know if I would change anything about the actual agreement. I think having a centralized communications system could send the closest unit. One of the variables that I would address is that some of the departments are modifying the manuals. Alexandria is going got use a 2" line for the standpipe and that messes up everybody because it's not standardized. This could snow ball and cause bigger problems.

AL1: N/A

AL2: Not about the agreement but if we could come up with regional dispatching, it would get rid of a lot of problems. But then who puts in the money. Where will it sit, who controls it? I think there is a lot of uniformity and autonomy, we don't have the same fire trucks and turnout, helmets

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

things like that. We call things the same, operate under the same SOPs and radios, but we speak the same language and can operate together. AL3: N/A	
32. **Tell me about other collaborative efforts between jurisdictions**. L1: N/A L2: We pre-position some boats to Alexandria and past Richmond during storms. We've sent people to the gulf area too. The schools have a great preplan but they won't let us access it. The police are fine on the scene but we do our separate thing. L3: • I can't speak for sure. I've never heard of anything other than like the inauguration. Even the big snow storm, nothing like that AR1: NOVA does police training together. The newest arrangement, since 2005, is the NVERS. It's the Northern Virginia Emergency Response system. It's a collaborative between the jurisdictions and the professions. It's fire and EMS, law enforcement, health , emergency management, the hospitals. It has a steering committee that is made up of two representatives from each discipline to create an operating platform for crisis events. When you have anthrax, or building collapse, we rely on expertise from agencies outside or area. We've been doing this since 2005. We built it on the	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

99

framework of MMRS but didn't limit to WMD. It's about the response system to get folks to work together. My job as Fire Chief is really the health and well being of the people of Arlington County. That is the same as the police chief. We provide that through a different set of services. At the end of the day aren't we here to serve our community and keep them safe? I just do it with fire trucks and ambulances. So it's through that we face a crisis and face novel events.

AR2: N/A

AR3: NMRT. Federally funded medical response team. That was a great example on the COG level of great representation of cooperation and integration from all the jurisdictions, except DC. That was a great example of all of us working toward a common goal and objective. The guys learned stuff and brought it home to share the wealth. The COG committees are great. The more we can talk and be on the same page, the better.

AL1: N/A

AL2: When it comes to buying, I don't know. The police don't. That doesn't mean there is not but I don't know.

NMRT, Marine Corps Marathon and Army 10 miler and fourth of July. The planned events go well. Being able to put people in the MAC enables us to coordinate efforts.

AL3:

33. Are there jurisdictions with whom you do not interact but would like to?	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing
L1: I work with everybody. Three states, multiple counties.	
L2: We work with everybody	
L3: N/A	
• We pretty much interact with everybody	
AR1: N/A	**Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting
AR2: I think our departments (DC & Arlington) would benefit. It would be nice to pull from across the river because we have a big hole there where 1 and 5 (stations) are just across the river.	
AR3: N/A	
AL1: N/A	
AL2: We run with Prince George on traffic accidents and a few fill-ins. But our people don't like it because they don't know anybody or what their SOPs are. Then there is the stupid stuff. Several years ago on a fill in, the volunteer chief would not give the code to get into the firehouse. They ended up at a different firehouse and talked to a division chief to work that out. Why does that happen? It's a trust issue. That would never happen in Fairfax. You have to have that trust. With DC, the folk here would love to run into the District but again, we don't know the SOPs or operating culture and I think that's important. The sops are one thing	**Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

and the culture is different. AL3: N/A	
34. Is there anything else you would like to share? L1: The NOVA agreement isn't perfect. We have different staffing levels and it just works out. I hear horror stories from Hurricane Sandy and you still hear about interoperability horror stories and we have improved so much in that area. L2: They work, it takes time, a lot of time, but if there is no reason not to, you should do it. L3: N/A AR1: Q. At the Pentagon, did you see a difference between NOVA units and other jurisdictions being able to work well together? Absolutely, and DC was a big one. Some of this is pretty well documented. Even though we had technical ability to communicate, but administratively, we had not resolved or practiced it. None of that had become routine, so even though we had the technical ability we couldn't make it work. None of that happened with Alexandria, they just fell right in. It was a novel incident but it the people and actions are the same. Even the shifts are the same. A shift in Arlington is A shift in Alexandria. <mark>There is a level of comfort and practice that is understood and there is not a jockeying for position</mark>. So if you can figure out how do it on a daily basis, you can do it better in a crisis. It is the novel, black swan events that all	**Collaboration** -Regional and interoperability efforts -Manuals -Committees and interaction -Cooperation and sharing **Equity** -Reciprocal relationship -Balance & exchange -Giving vs. getting **Leadership** -Governance issues -Organizational structure -Written agreement **Trust** -Nature of relationships -Understanding & concern

the best planning in the world will not prepare you for the challenges and decisions you will have to make. It is then that you have to rely on relationships. Because you need people to act in your best interest and not self-interest. That comes about when you know each other and operate in a system that is well understood.

AR2: The system really works well. I think the feet on the ground should be the barometer of how it works. So if somebody doesn't get the assignment they are supposed to, we work it out. The guys, no matter how messed up a policy is, we make it work. I think automatic aid is one of those things that needs to be done.

AL1: you need to consider the null hypothesis in this particular case. Your going in with the idea that DC should do this and that's a good goal but you should consider the alternative. In the long run, nobody can argue and plenty of literature to suggest that what we are doing, the technical term is inter-local cooperation and coordination as opposed to actual consolidation. So consolidation wouldn't work at the scale we're talking about. And again, the idea of creating a regional authority isn't going to work at the macro or micro region. So, the next best thing is varying degrees of coordination and yeah I think it would be great if we could have a high performing automatic aid system that stretched all across the capital region and even up to Baltimore and Richmond. But for now, I don't

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

know if that would be good. But we have to agree that whatever it is, it's not going to operate at 100%. If you look at similarly complicated or complex systems, like the air traffic control systems. So if you look at a system like that, you know it's not going to operate at 100% everyone knows this. The best we can hope for is something like that. And it's a highly reliable system. Although some have an unrealistic expectation of that system, we don't crash planes, people get where they need to go, maybe not within the time window originally specified. The public understands that things happen and sometimes it takes longer than you thought. But that system is heavily regulated and resourced. Now if you fly Southwest you get peanuts, and if you fly US Airways you don't unless you pay. So there is flexibility in the system, but the critical work gets done. We need to discard the idea of a perfect system.

There is also a real political dimension to this. When it comes down to saying we are going to send our 911 calls to someone else, they don't want to hear it. The hazmat rig won't say Alexandria? You're killing us, taking away our esprit d' corps. Efficiency isn't always the overriding concern. I get complains why is there an Arlington County fire engine here. I can imagine the call if there was DC engine here. I'd love to have that conversation. But

Collaboration
-Regional and interoperability efforts
-Manuals
-Committees and interaction
-Cooperation and sharing

Equity
-Reciprocal relationship
-Balance & exchange
-Giving vs. getting

Leadership
-Governance issues
-Organizational structure
-Written agreement

Trust
-Nature of relationships
-Understanding & concern

you have to properly resource it, with regional people. Building the relationships is a big piece of it. Every jurisdiction has to look at what the upside versus the downside is for them. I don't think anyone would lose resources, you may move them, because the whole region is under resourced. People don't believe that but we need to be honest about our capabilities and limitations. If people knew that on a daily basis, no one is looking at the health of the overall system, they would be stunned. People think that like the show 24, there is someone looking at a screen paying attention to the whole region but it doesn't exist. But we do have to figure it out because there is value.

On 911 was there a difference between NOVA units and non-NOVA units?

L1: I remember Sterne (DC). I talked to him at the Pentagon. We weren't meshed but I saw him. We still couldn't talk to DC. That wasn't done yet.

Huge. DC was operating their own ICS. Chief Schwartz told them that this is how we are doing business and it worked out. When you work with people on committees, you know them and can work well together. We don't know your (DC) guys. We don't know what they are going to do; they don't know what we are going to do.

AR3: It's really a success story. You have 911 to show for it. There are some places like Bristol

Virginia, Tennessee that they don't cross the lines. Kansas City, Missouri and Kansas are the same too. AL1: N/A AL2: N/A AL3: N/A	

APPENDIX B.   DATA ANALYSIS

This research study collected data through an interview process to identify common themes describing the NVMR Agreement. Data was divided into four categories: collaboration, equity, leadership, and trust. The commonalities that are found in the participant's answers to the formal research questions are evidence for the conclusions and recommendations in this thesis.

A.   DATA INTERPRETATION

The data drawn from the thesis interview questions and answers are found in Table 1, NVMR Agreement Common Themes. From this table, the following interpretations are made:

1.   Collaboration

All interview subjects were able to cite numerous examples of collaborative efforts between jurisdictions. This supports the conclusion that collaboration is an integral part of this automatic aid agreement. It further indicates that recommendations that include inter-jurisdictional collaborative efforts should be part of any automatic aid agreement.

2.   Equity

All interview subjects discussed equity and how equitable their jurisdiction operated within the system. Each subject could provide specific examples of an inequitable relationship with neighboring jurisdictions. However, most were quick to dismiss the inequity as being less important than the overall regional equity. Sharing the resources over the region took priority over maintaining individual equitable relationships. However, at the executive level, recognition of inequity was followed with action taken or being taken to address the issue. Recommendations that address inequitable relationships must be considered.

3. Leadership

All interview subjects, with one exception, identified leadership as a significant factor in the success of the NVMR Agreement. The majority of responses in this category was from the executive level and offered considerable knowledge regarding the history of the agreement. The legal authorities and structures that drive policy were a major part of these responses. Recommendations that address the leadership needed for both the creation and maintenance of any automatic aid agreement needs to be examined.

4. Trust

All interview subjects provided examples of how trust impacted the agreement. Although not as numerous as collaboration, the qualitative nature of the responses for trust prove that it is the salient factor in the NVMR Agreement. With the benefit of trust, subjects reported symbiotic relationships and personal satisfaction. This conclusion suggests that trust is most important in any automatic aid agreement.

B. DATA CONSOLIDATION

The interpretations summarized in the preceding section were drawn from observing the collected data. Once the interview transcripts were reviewed and pertinent themes were identified, the strength of theme commonalities could be measured. For the purposes of this study, a theme was found to be reliable evidence if all interview participants independently reference the theme. If a common theme was found in all but one interview, then that theme was considered reasonable evidence for this study. Eight or more study participants independently identified these themes.

Table 2 contains the four common themes and how often each participant referenced them in the interview. A breakdown by jurisdiction is included as well.

Table 2.   NOVA Agreement Common Themes

SUBJECT	THEMES			
	COLLABORATION	EQUITY	LEADERSHIP	TRUST
AL 1 EXECUTIVE	6	4	4	4
AL 2 COMMAND	8	2	2	4
AL 3 TACTICAL	7	4	1	5
AR 1 EXECUTIVE	6	4	6	4
AR 2 COMMAND	8	6	3	4
AR 3 TACTICAL	3	4	3	5
L 1 EXECUTIVE	2	1	2	2
L 2 COMMAND	6	3	0	1
L 3 TACTICAL	3	2	2	4
AL TOTAL	21	10	7	12
AR TOTAL	17	14	12	14
L TOTAL	11	6	4	7

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

Adams, John Stacey. "Toward an Understanding of Inequity." *Journal of Abnormal and Social Psychology* 67 (1963): 422–436.

Adams, J. Stacey, and Sara Freedman. "Equity Theory Revisited: Comments and Annotated Bibliography." *Advances in Experimental Social Psychology* 9 (1976): 43–90.

Ahmed, E., A. S. Elgazzar, and A. S. Hegazi. "On Complex Adaptive Systems and Terrorism." *Physics Letters A* 337, no. 1/2 (2005): 127–129.

Anderson, Christopher A. "No Emergency Incident Recognizes Borders." Master's thesis, Naval Postgraduate School. 2011.

Arlington County Department of Community Planning and Housing. *Profile 2012*. Arlington, VA: Author, 2012.

City of Alexandria. FY2012 Proposed Budget. Alexandria, VA: Author, 2011

City of Alexandria Department of Planning and Zoning. *Alexandria 2012 Census Data* Profile. Alexandria, VA: Author, 2010.

Baxter, Pamela, and Susan Jack. (2008, December). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544–559.

Beene, Dennis, and Dacia Young. Law Enforcement Mutual Aid Plan. California Emergency Management Agency. November 9, 2009.

Bellavita, Christopher. *Changing Homeland Security: Shape, Patterns, Not Programs*. Naval Postgraduate School. Monterrey, CA: Center for Homeland Defense and Security, 2006.

Bernays, Edward Louis, and Mark Crispin Miller. *Propaganda*. Brooklyn, N.Y, Ig Publishing, 2005: 1928.

Bigley, Gregory, and Karlene Roberts. "The Incident Command System: High-Reliability Organizing for Complex and Volatile Task Environments." *The Academy of Management Journal* 44, no. 6 (Dec. 2001): 1281–1299.

Bolino, Mark, and William Turnley. "Old Faces, New Places: Equity Theory in Cross-Cultural Contexts." *Journal of Organizational Behavior* 29, no. 1 (2008): 29–50.

Bolman, Lee; Terrence Deal. *Reframing Organizations: Artistry, Choice, and Leadership* (393). Jossey-Bass. San Francisco, California, 2008.

Bratton, William, and Zachary Tumin, *Collaborate or Perish!*. New York: Crown Business, 2012.

Burke, Warner. *Organization Change: Theory and Practice*. Foundations for Organizational Science. 2nd ed. Los Angeles: Sage Publications, 2008.

Camerer, Colin, and Kenneth MacCrimmon. "Underground and Overpaid: Equity Theory in Practice", in *Equity Theory: Psychological and Sociological Perspectives*, 295–325. Praeger Press: New York, 1983.

Carrell, Michael, and John Dittrich. "Equity Theory: The Recent Literature, Methodological Considerations, and New Directions." *The Academy of Management Review* 3, no. 2 (Apr., 1978): 202–210.

Caudle, Sharon. "The Balanced Scorecard: A Strategic Tool in Implementing Homeland Security Strategies." *Homeland Security Affairs* 4 (2008): 3.

———. *Basic Practices Aiding High-Performance Homeland Security Regional Partnerships* no. 3 (2006): 1-16.

Choi, Thomas, Kevin Dooley, and Manus Rungtusanatham. "Supply Networks and Complex Adaptive Systems: Control Versus Emergence." *Journal of Operations Management* 19, no. 3 (2001): 351–366.

Christensen, Clayton (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Perseus Books Group. Kindle Edition

Clovis, Samuel. "Thinking About National Preparedness: The National Planning Scenarios and Jurisdictional Own-source Capabilities." Unpublished Manuscript. Naval Postgraduate School Center for Homeland Defense and Security

Cooley, Jack. "Putting the Mutual Back into an Automatic Aid Agreement." Applied Research Paper for the Executive Fire Officer Program, National Fire Academy. 2003.

Covey, Stephen. *Smart Trust*. New York, NY: Free Press, 2012.

Department of Homeland Security. *Strategic National Risk Assessment*. December 2011.

District of Columbia Homeland Security and Emergency Management Agency. *Presidential Inauguration After Action Report*. June 2009. 14.

Drezner, Daniel. "The Outsourcing Bogeyman." *Foreign Affairs* 83, no. 3 (May–June 2004): 22–34.

Elliott, Euel, and L. Douglas Kiel. "A Complex Systems Approach for Developing Public Policy Toward Terrorism: An Agent-Based Approach." *Chaos, Solutions & Fractals* 20, no. 1 (2004): 63-68.

Frankfurt, Harry Gordon. *On Bullshit*. Princeton, NJ: Princeton University Press, 2005.

Gardner, Howard. *Changing Minds : The Art and Science of Changing our Own and Other Peoples Minds*. Boston, Mass: Harvard Business School Press, 2004.

Garrett, Christopher. "Identifying Fire Response System Options for the City of Owasso (OK) that Meet Staffing and Response Time Criteria Established in NFPA 1710." Applied Research Paper for the Executive Fire Officer Program, National Fire Academy, 2011.

Grandstaff, Mark, and Georgia Jones Sorenson. *Strategic Leadership : The General's Art*. Vienna, VA: Management Concepts, 2009.

Hansen, Morten and Nitin Nohria, "How to build collaborative advantage," *MIT Sloan Management Review* 46, no. 1 (2004): 22–30.

Harris, Richard. "Pinning Down the Equity Formula." *Equity Theory: Psychological and Sociological Perspectives.* (1983): 207–243.

Harvard Business School. Press. *Harvard Business Review on Leading through Change*. The Harvard Business Review Paperback Series. Boston: Harvard Business School, 2006.

Hill, Cheryl. "EMS Response to Mass Casualty Incidents: The Critical Importance of Automatic Statewide Mutual Aid and MCI Training." Master's thesis, Naval Postgraduate School, 2008.

Hocevar, Susan, Gail Fann Thomas, and Erik Jansen. "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness",in *Innovation through Collaboration (Advances in Interdisciplinary Studies of Work Teams, Volume 12)*, ed. Michael M. Beyerlein, Susan T. Beyerlein, Frances A. Kennedy (Emerald Group Publishing Limited,2006),

Hoople, Daniel. *Congressional Budget Office Cost Estimate: S1245 A bill to reform mutual aid agreements for the national capital region*. August 2007.

Innes, Judith, and David Booher. "Consensus Building and Complex Adaptive Systems: A Framework for Evaluating Collaborative Planning." *Journal of the American Planning Association* 65, no. 4 (09, 1999): 412.

International Association of Fire Chiefs. *A National Mutual Aid System for the Fire Service: A Strategic Plan*. August 2006.

Klitgaard, Robert, and Gregory Treverton. *Assessing Partnerships: New Forms of Collaboration*, Washington, DC, IBM Center for the Business of Government,2003.

Lewis, Theodore. *Critical Infrastructure Protection in Homeland Security: Defending a Networked Nation*. Hoboken, N.J: Wiley-Interscience, 2006.

———. *Bak's Sand Pile : Strategies for a Catastrophic World*. Williams, CA: AGILE Press, 2011.

Lindsay, B. R. see U.S. Library of Congress, Congressional Research Service.

Lynn, Phil. United States. Bureau of Justice Assistance, and International Association of Chiefs of Police. *Mutual Aid: Multijurisdictional Partnerships for Meeting Regional Threats* U.S. Dept. of Justice, Office of Justice Programs, Bureau of Justice Assistance, 2005.

Meadows, Donella. *Thinking in Systems: A Primer*. White River Junction, Vermont: Chelsea Green Publishing, 2008.

Messick, David, and Karen Cook. *Equity Theory: Psychological and Sociological Perspectives*. New York, NY: Praeger, 1983.

Metcalf, William. See U.S. Congress, House.

Mintzberg, Henry;Ahlstrand, Bruce;Lampel, Joseph. *Strategy Safari: A Guided Tour Through the Wilds of Strategic Management.* NY: Free Press, 1998.

Moghaddam, Fathali. *Multiculturalism and Intergroup Relations*. Washington DC: American Psychological Association, 2008.

Morley, Kevin, R. Riordan, and American Water Works Association. *Utilities Helping Utilities: An Action Plan for Mutual Aid and Assistance Networks for Water and Wastewater Utilities.* American Water Works Association, 2006.

Moynihan, Donald. *Leveraging Collaborative Networks in Infrequent Emergency Situations*. Washington, DC, IBM Center for the Business of Government, 2005.

National Commission on Terrorist Attacks upon the United States. (Philip Zelikow, Executive Director; Bonnie D. Jenkins, Counsel; Ernest R. May, Senior Advisor). *The 9/11 Commission Report*. New York: W.W. Norton & Company, 2004.

National Fire Protection Association. "Third needs assessment of the U. S. Fire Service." June 2011. NFPA: Quincy MA.

Nicholson, William C. *Emergency Response and Emergency Management Law: Cases and Materials*. Springfield, Ill.: C.C. Thomas, 2003.

Nohria, Nitin, and Rakesh Khurana. *Handbook of Leadership Theory and Practice : An HBS Centennial Colloquium on Advancing Leadership*. Boston, Mass: Harvard Business Press, 2010.

Pelfrey, William. The Cycle of Preparedness: Establishing a Framework to Prepare for Terrorist Threats. Journal of Homeland Security 2 no. 1 (2005).

Quinn, Robert. *Building the Bridge as You Walk on It: A Guide for Leading Change*, 1st ed. San Francisco: Jossey-Bass, 2004.

Rouse, William. "*Managing Complexity,*" Information, Knowledge, System Management 2, no. 2 (2000): 143–165.

Ritchie, Joe. "Fire Protection Plan Set in N. VA. – ProQuest." Accessed 10/11/2012. http://search.proquest.com.libproxy.nps.edu/docview/146346547/abstract/139B7865 3BB1716664A/1?accountid=12702.

Stacey, Ralph D. *Complexity and creativity in organizations*. Berrett-Koehler Publishers, 1996.

Stier, D. D., and R. A. Goodman. "Mutual Aid Agreements: Essential Legal Tools for Public Health Preparedness and Response." *American Journal of Public Health* 97, Supplement 1 (2007): S62-S68.

System Planning Corporation. *Assessment of Fire Department Resource Locations, Staffing, and Facilities: Alexandria Virginia*. Arlington, VA: Author, 2007.

Thurmaier, Kurt, and Yu-Che Chen. "Managing for less: The Fiscal Attributes of Collaboration." *National Public Management Research Conference*. October 2009.

U.S. Congress, House. *Leveraging Mutual Aid for Effective Emergency Response.* Hearing before the Subcommittee on emergency communication, preparedness, and response, 110th Congress November 15, 2007 (statement of Kenneth D Murphy).

———. *Streamlining Emergency Management: Improving Preparedness, Response, and Cutting Costs.* Hearing before the Subcommittee on economic development, Public Buildings, and Emergency Management of the Committee of Transportation and Infrastructure. 112th Congress October 13, 2011 (statement of William Metcalf).

———. *Leveraging Mutual Aid for Effective Emergency Response.* Hearing before the Subcommittee on emergency communication, preparedness, and response, 110th Congress November 15, 2007 (statement of Chief Steven P. Westermann).

United States Fire Administration. *Special Report: Mutual aid: lessons learned from the California system.* USFA-TR-042. January 1991.

U.S. Government Accountability Office. *Effective Regional Coordination Can Enhance Emergency Preparedness* (2004). Accessed 10/25/13. http://www.gao.gov/new.items/d041009.pdf.

U. S. Library of Congress, Congressional Research Service, *The Emergency Management Assistance Compact (EMAC): An Overview*, by Bruce Lindsay, CRS Report RL34585 (Washington, DC: Office of Congressional Information and publishing, July 21, 2008)

Yin, Robert. *Case Study Research Designs and Methods*, 4th ed. Thousand Oaks California: Sage Publications. 2009.

INITIAL DISTRIBUTION LIST

1.   Defense Technical Information Center
        Ft. Belvoir, Virginia

2.   Dudley Knox Library
        Naval Postgraduate School
        Monterey, California